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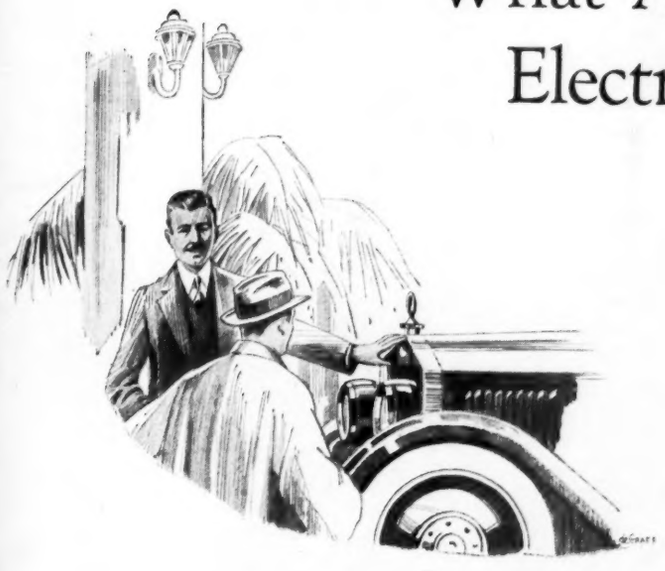

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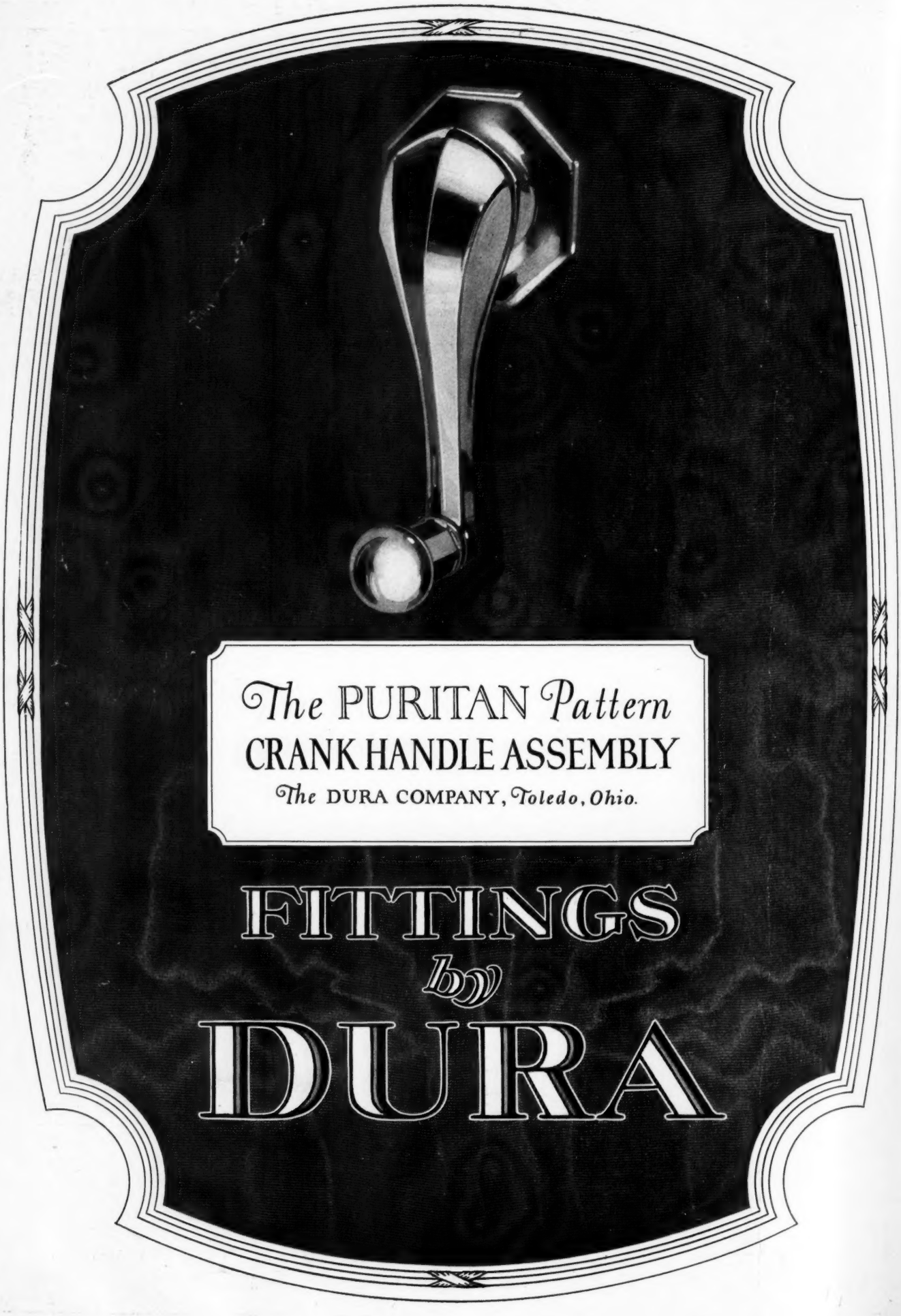
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AUTOMOTIVE INDUSTRIES
The AUTOMOBILE

VOL. L NEW YORK—THURSDAY, APRIL 17, 1924 No. 16

Give Business Fair Deal, Is Creed of New Attorney General

Predecessor's restrictive rulings on collection of trade data will be reopened by Mr. Stone. Takes a sympathetic view of legitimate association activities.

By John T. Flynn
Associate Editor of the U. P. C. News Service, Inc.

WITH Harlan Fiske Stone now established in the chair left vacant by Harry M. Daugherty, three things of interest to the whole business world are certain.

First, there will be no change in the attitude of the Department of Justice toward the prosecution of those activities of trade associations which can be regarded properly as combinations for the purpose of fixing prices, restraining production and parcelling out customers.

Second, the ruling of former Attorney General Daugherty prohibiting such associations from collecting statistics about their respective trade and distributing them to their members will be reopened.

Third, the new Attorney General has entered upon his duties with a thorough knowledge of business and a sympathetic understanding of its problems.

The last two items, at least, represent a distinct gain for the business organizations of the country.

I talked with Mr. Stone in his New York office as he was clearing his desk on the eve of leaving for Washington to be sworn in. While he is known chiefly as the Dean of the Columbia Law School, it is to be remembered that he was, until his appointment, a member of the law firm of Sullivan & Cromwell, one of the largest and most important in the metropolis. The senior member of this firm is William Nelson Cromwell. For more than a generation through his office have passed hundreds of the leading figures in business of this country and Europe as clients of Cromwell and his associates.

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Harlan Fiske Stone

Because the President's newly named legal adviser had inherited one of the most delicate controversies affecting organized business, I went to see Mr. Stone for AUTOMOTIVE INDUSTRIES, because I knew the business community was awaiting eagerly the position he would take on this controversy, and was curious to know something of his character and the color and texture of his mind.

The Attorney General is a big man, suggestive of the chief quarry product of his native State. Behind the walls of his powerful body are vast stores of physical energy. His friends tell me that in his professional capacity he is capable of amazing stretches of work. He is quite different from any of his prede-

NO branch of the Government is in a position to exert a more malevolent influence on business than the Department of Justice. Like Caesar's wife, it must be beyond suspicion. The nation must feel that all its acts are based upon a desire for exact justice rather than upon political expediency. It should prosecute relentlessly when the public good demands, but it should never persecute. It should abide by the spirit rather than the letter of the law and it should not attempt to exact a pound of flesh.

Naturally, therefore, business is profoundly interested in the character and characteristics of Harlan F. Stone, late dean of the College of Law of Columbia University, who has been selected by President Coolidge to succeed Harry M. Daugherty as Attorney General. It is gratifying to AUTOMOTIVE INDUSTRIES, for that reason, to be able to present this authoritative summary of Mr. Stone's views concerning the attitude the legal department of the Government should assume toward trade and industry.

Mr. Daugherty made it plain throughout his régime that he felt a distinct aversion toward the activities of trade associations and that he viewed all of them with suspicion. In this respect his views clearly clashed with those of Secretary of Commerce Hoover, who believes business cannot operate intelligently without basic statistics as a guide.

Mr. Stone holds no such notions as Mr. Daugherty and we are convinced the automotive industry will find much of interest in this statement of his opinions. While he is not quoted directly, the statements made can be accepted as accurate and authoritative.

cessors. Philander C. Knox was small, nervous, aloof, and the purely intellectual type. Wickersham, slight, with penetrating eyes enlarged behind powerful spectacles, was the perfect specimen of the sophisticated corporation lawyer. Palmer was bulky and cocksure and jaunty. Daugherty was jovial, at times breezy, and again curt and brusque. Stone reminds one more of Grover Cleveland than of any other man in public life, save that he is more cordial and genial and not so stern as Cleveland. And his first appearance in the rotogravure sections in fisherman's togs subtracts nothing from that resemblance.

New Official Well Qualified

A distinguished New York lawyer who has watched Mr. Stone from his earliest days at the bar, discussing him particularly in view of the business problems which confront him, made this impressive estimate of him:

"There is no lawyer in the country better qualified for this job. He is one of the soundest, sanest, most virile and best balanced men at the New York bar. There is no man in America to whom I would rather leave the settlement of these delicate business problems. He has a profound knowledge of the law. He is a man with an intensely practical turn of mind.

"He has been a member of two of the most important law firms in America, measured by their relations to big business. He has no political past. This is most fortunate. For in these questions affecting business no factors will enter the discussion save the law and facts in the case. His mind will not be cluttered up with political considerations. He is fearless and will not hesitate to hold in favor of a business organization because some politician may charge him with favoring big business."

The Attorney-General was reluctant to discuss for publication the subjects bequeathed to him by the late occupant of the Department of Justice.

"If I were elected to a legislative job," said Mr. Stone, "I would be delighted to give you a statement about almost anything. But this job has nothing to do with the making of the laws. My business will be to enforce the laws as I find them, and this, of course, I will do without fear or favor."

But Mr. Stone talked freely about himself and his philosophy as a lawyer. He knows business. He has been a director of a number of business corporations. He has represented large business interests. He has been a studious observer of the evolution of American business processes. And he will approach the various problems growing out of the contact of business with the Department of Justice with a sympathetic understanding of the things American business men are trying to do.

I have talked with some of Mr. Stone's friends and I feel that I am in a position to say that his first acts in his new post will be as follows:

First, he will personally examine all the important prosecutions now pending against various trades and groups of manufacturers because of alleged violations of the Sherman Anti-Trust Law.

Second, he will reorganize the Department of Justice. This will be neither summary nor dramatic, but unostentatious and after mature examination of its affairs. He will in all likelihood add one more investigation to those already under way in Washington. But it will be his own investigation of his own department with a view to reforming it on efficient lines.

Third, he will make a thorough examination of the war-fraud cases and the civil suits and criminal prosecutions growing out of war-time activities of the Alien Property Custodian.

Fourth, name a new head for the Bureau of Investigation of the Department of Justice.

Fifth, reopen the subject of the right of trade associations to collect data about their respective trades and distribute this information to their members.

Association Problems to Be Analyzed

In doing this last service to business, Mr. Stone will take up the whole subject with Secretary of Commerce Hoover. Now that Mr. Daugherty has left the cabinet it need no longer remain a secret that there was a very grave disagreement between the Department of Commerce and the Department of Justice over this issue. Between Mr. Stone and Mr. Hoover there will be a calm and a fruitful discussion of the matter that was not possible between Mr. Hoover and Mr. Daugherty.

This controversy has raged since last December, following the decision of a United States District Court in the tile manufacturers' case and later in the cement case. In the latter case particularly, Judge Knox laid down a code of prohibited activities for trade associations

(*Continued on page* 885)

Small Truck Makers Seek Means to Provide Practical Aid to Dealers

Number of retailers should be limited to ability of factory to provide actual assistance in selling and servicing. The small manufacturer can do profitable business within limited areas.

ONE live dealer is worth ten who have one foot in a business grave. The power of a sales organization cannot be gaged properly by number of dealers alone. The ability and enthusiasm of the retail representatives are likely to have more effect on the sales curve than will the mere number of distributing points. Particularly is this true as regards motor truck merchandising. These are the observations which result from a survey of present conditions in the truck field.

The car manufacturer is far more justified than is the truck maker in gaging the potentialities of his retail force by the total number of dealers. Some of the problems are similar, but many of them are quite different. Organizations, therefore, must be built and judged on a different basis.

National distribution, if it means only a large number of quiescent, authorized agents throughout the country, will net less actual sales to the factory than distribution in one or two States through live, intelligent dealers, able and willing to push sales. The efficiency of a dealer organization can be judged in the long run by only one standard —how many trucks can it sell?

Supervision Is Difficult Task

It is difficult for a small truck company to properly supervise and assist a body of dealers scattered here and there all over the United States. To keep in close contact with such an organization, to give the dealers practical assistance in merchandising problems, and to be familiar with all the varying local problems is an expensive task for the small factory—often so expensive as to make sales profitless when they do come in.

Nothing is to be gained from having a big paper organization which doesn't produce profits. There are truck companies in business today whose name would be unfamiliar to 50 per cent of the people in the automotive industry but which are going along paying dividends every year. They have built up a small but steady business within limited areas, have specialized on giving exceptionally rapid and efficient service and have concentrated their sales efforts.

There are other companies whose names are thoroughly familiar to everyone in the automotive field, whose plant facilities and opportunities are very similar to those of the companies just described. These latter organizations, however, have insisted on striving for national distribution and have labored steadily under increasing merchandising costs and service difficulties.

Selling trucks is a specialized task. To sell them properly requires a knowledge, not only of salesmanship and of the technical phases of the vehicle, but also of how to analyze and solve motor transportation problems. Truck buyers are not nearly so much interested in the mechanical parts of the vehicle as they are in what it will do. They want to know how much service it will give and how efficiently it will perform a particular task. To sell a product on this basis necessitates more detailed knowledge of the use of the vehicle than is required in passenger car sales work.

But even passenger car manufacturers are finding it necessary to do an increasing amount of educational work among dealers and to give them more and more practical assistance direct from headquarters. Obviously, the same problem confronts the truck manufacturer in more complex form. The big truck companies are working along just such lines all over the country. A large part of their sales are made through their branches by factory-trained and factory-directed men.

Direct Contact Necessary

The smaller organizations must have similar direct contact with the retail field—not necessarily through branches —if they are to sell trucks. They can operate successfully such retail distribution points as they can reach frequently with factory assistance and service. Throughout a small area around the manufacturing plant sales probably can be handled direct from headquarters. Through limited areas the small factory undoubtedly can maintain close relationships with dealers without adding materially to sales expense. Within such a territory they can offer to the user a type of service which will be difficult for even the largest national distributors to equal.

It can be put down as an axiom, however, that sales expense per unit increases directly with the size of the territory involved. Additional dealers will be profitable just so long as they are limited in location and number so that each one can have real, practical assistance from the factory. Outside of these limits the number of dealers may be increased very greatly without having any material effect on actual sales.

Each company, of course, has individual problems which cannot be solved by any set formula, but the general principles expressed are borne out by analysis of the experience of many small truck manufacturers during recent years. There is plenty of room in the truck field for a number of smaller manufacturers, provided proper marketing methods are employed.

A SURVEY made during the past year by the Canadian Department of Mines with regard to the possibilities of recovering helium from the natural gas resources of the Dominion has not given very encouraging results. It was found that the natural gas of Southern Alberta contains helium to the extent of about 0.33 per cent and that it would be possible to recover about 15,000,000 cu. ft. annually.

This would be sufficient to fill from five to six dirigibles of the R type used by the British. The American sources have a helium content of 0.94 per cent, hence production of the gas in Canada would be comparatively more expensive and it would be necessary to develop special equipment for the treatment of the gases of low helium content.

Pedestrian, as Well as Driver, Needs Traffic Education

New Haven conference develops constructive ideas on elimination of highway accidents. Roads should be built to carry safely cars traveling at 35 m.p.h. or more.

By Norman G. Shidle

AN unusual number of sane, constructive ideas about traffic regulation and legislation were developed at the conference on motor vehicle traffic held in New Haven, April 9-11, under the joint auspices of Yale University and the state of Connecticut. The acute nature of the accident situation was recognized fully by the various speakers, but there was ample appreciation of the fact that the car driver is not the only factor in the case that has to be supervised and regulated.

The fair attitude expressed toward the motor vehicle operator was particularly significant since many of the speakers were representatives of state police or motor vehicle departments under whose care or influence is much of the traffic regulation and control. Need for education of the public at large was emphasized throughout the conference and various means of accomplishing such education were outlined in detail. "Prevention of violations of traffic laws is far better than punishment," said A. F. Foote, Commissioner of Public Safety of Massachusetts, expressing his general attitude toward police activities. Mr. Foote believes that the only final solution of the traffic problems is to get across to all drivers the idea that, "freedom is obedience to the law."

"Any plan for motor vehicle accident prevention must recognize," said R. B. Stoeckel, Commissioner of Motor Vehicles, Connecticut, "that nothing can be accomplished without an enthusiastic public sentiment against accidents." Discretion in the enforcement of laws and in the imposition of penalties must be left to the judges, Mr. Stoeckel said. He was emphatic in his statement that legislatures should not attempt to fix specific penalties except within very general limits.

Build Roads to Meet Motor Needs

Col. F. S. Greene, Superintendent, Department of Public Works, New York State, also indicated a thoroughly reasonable attitude toward the motor vehicle and those who use it. The state must build highways which will safely accommodate vehicles traveling at a speed of 35 m.p.h. or more, Mr. Greene said, or it is behind the times. The trouble with most roads today, he pointed out, is that they were laid out before the automobile became an important factor in traffic. Consequently, they are too narrow to permit proper and efficient use of this new transportation agency. Most of the old roads were built about 12 ft. wide and as long as possible, Mr. Greene said, on a theory of "the more miles the more votes."

Throughout the conference tolerance and fair mindedness played an important part. The vehicle driver was not white-washed nor painted as a saint, but this group of men, who have studied intensively the problems of highway safety, displayed a very thorough appreciation of the point of view of the automotive industry and the motor car owner.

Out of the conference grew a temporary executive committee whose function it shall be to analyze and digest the ideas advanced at the conference, to draft and formulate a highway accident prevention plan along broad lines and to call into this work representatives of every phase of the automotive industry. The appointment of such a committee, suggested by Mr. Stoeckel, was approved unanimously by those present, but the individuals to comprise it have not yet been named.

The list of speakers at the conference included judges, educators, police commissioners, and the motor vehicle administrators, as well as men who have specialized in safety activities.

Basic Principles Propounded

The chief ideas developed as a result of the three-day session were:

1. Education of the pedestrian is essential to any satisfactory solution of the traffic problem. In this work every means of propaganda must be used constantly and effectively. The task involves changing firm habits of mind formed during the childhood of the present generation when conditions of living were less complex than they are today.

2. Traffic regulation is just as important outside the large cities as it is within them. A large percentage of the serious accidents occur outside congested districts. More adequate police control and highways more suitable for modern travel are needed to remedy accident troubles on interurban routes.

3. A definite effort should be made all over the country to collect and compile useful figures on highway accidents. No data whatever is available in many places and that which has been gathered often is worthless because of inaccuracies. Little real progress in remedying the accident situation can be expected until some sound data are available for study. Connecticut probably has gone farther than any other state in the compilation of information along this line.

4. The human mind is the most important factor in making the highways safe or unsafe.

5. Strict enforcement of a few laws will do far more to solve traffic difficulties than will lax enforcement of a complex system of regulations.

6. Uniformity of traffic regulations is highly desirable. "There is a strong tendency to blame the driver when accidents occur," said A. B. Meredith, Commissioner of Education, Connecticut, "but a majority of accidents are due to carelessness on the part of the pedestrian." Mr. Meredith was discussing highway safety education for

TRAFFIC LINES

(Bits of traffic wisdom propounded at the New Haven conference)

"ACCIDENT prevention is not an academic but an immediate practical problem."

"There is a tendency to blame the driver on all occasions, but most accidents are due to carelessness on the part of the pedestrian."

"Traffic education is needed just as badly in the small towns as in the large cities.

"A state is behind the times if it doesn't build roads to accommodate safely vehicles moving at a speed of 35 m.p.h. or more."

"Any plan for motor vehicle accident prevention must recognize that nothing can be accomplished without an enthusiastic public sentiment against accidents."

"The automobile is a free agent for the expression of the operator's character and desires. The automobile injected temperament into traffic."

"The most serious accidents usually occur on interurban roads."

school children. Child accidents, he went on to say, usually are due to the fact that the child's mind is miles away. The child must be shown the necessity of keeping his mind on what he is doing when crossing streets and the selfishness of failing to think. The idea that being careful is cowardly must be dispelled.

Only one out of 65 child accidents in Connecticut last year could be laid entirely on the automobile driver, Mr. Meredith said. All the rest were due partly or entirely to carelessness on the part of the child.

Work in Small Towns Needed

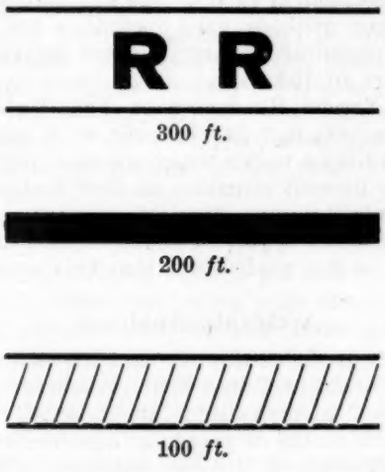
Safety education is needed in the small towns as well as in the cities: first, because the children going to school in small towns are likely to live a large part of their lives in cities, and second, because the traffic problems of the small town are growing. By the time these children have grown up, congestion will exist where it does not today. "Accident prevention is not an academic, but a practical and immediate problem," Mr. Meredith concluded.

Carrying the idea of safety education into broader fields, E. G. Payne, Professor of Education, New York University, pointed out that the average adult of today is equipped with inherited tendencies making him unsuited for the complex environment in which he finds himself. Redirection of these tendencies is the task of highway accident prevention.

T. W. Salmon, associate professor of psychiatry, Columbia University, analyzed the relation between the human mind and traffic accidents. He showed that many people now licensed to drive vehicles are not to be trusted with them, and pointed out that the reactions of the human mind play a tremendously important part in accidents.

Mr. Greene in his talk on "Highway Improvement," developed the general thesis that roads should be built to meet modern transportation needs. The automobile is a useful tool of modern life and highways should permit it to function at its highest efficiency. The general idea gathered from Mr. Greene's remarks was that he favors finding means of making it safe to travel at relatively rapid speeds rather than trying to achieve safety simply by limiting the speed of the vehicle.

Elimination of grade crossings is the only final solution for this important source of danger, Mr. Greene said; but he pointed out that under the best conditions this could not be accomplished entirely inside of 15 to 25 years. In the meantime, other means of reducing hazard are necessary. Warning signs at the side of the road are useful, he said, but often are easy for the motorist to miss. He showed a method of road marking developed for use in New York which, he believes, has special merit, because the motorist cannot fail to see a sign on the road in front of him unless he is drunk. The new system involves the following markings, about 4 ft. wide, directly across the road approaching a grade crossing:



Sharp turns should be safeguarded with large, prominent signs designating not only the presence of the turn, but also the direction it takes. Motor truck roads probably will come eventually, but the time for them has not yet arrived, Mr. Greene said.

W. P. Eno outlined methods for better control of traffic in congested centers and urged that all agencies working along this line coordinate their efforts. They can accomplish a great deal, Mr. Eno said, if they pull together and work to get results rather than personal credit.

Police Attitude Reasonable

Talking on "Police Methods," Mr. Foote developed the thought that "freedom is obedience to the law," He emphasized the fact that the traffic problem is state-wide and that proper regulation is lacking in outlying districts at the present time. It is true that the automobile has taken the people out into the country, he said, but it has taken the traffic problem out there also. He said that the number of towns and areas having no adequate police protection or control is astounding. In Massachusetts the State Police Patrol has been formed to take care of such

sections. It is doing good work but more men are needed. The same situation prevails in other states, he said.

Stating that prevention is better than punishment, Mr. Foote urged the following steps to solve certain parts of the traffic accident problem:

1. Maintenance of a sufficient police force in cities and towns.
2. Maintenance of sufficient state police force to give adequate traffic control on interurban roads.
3. Supplying to those police who regulate traffic a swift method of travel. For this purpose the best equipment is none too good.

Establishment of District Courts Advocated

Establishment of district courts throughout each state to specialize on automobile and traffic cases was urged by D. A. Adams, secretary, New Haven Automobile Club. These courts would serve to abolish the pernicious fee system to local constables which is now in vogue, would provide proper enforcement of the law, and at the same time insure more just treatment to motorists. Mr. Adams also emphasized that 85 to 90 per cent of accidents occur outside congested districts, where there is not adequate police control.

He outlined several methods of curbing reckless driving which have been put into effect in various cities. One means used is a reckless drivers' school, meeting for three hours one evening a week for five weeks. Offenders are given a choice of paying a fine or attending the school. When they choose the school and take the course, they are given a detailed written examination covering traffic regulation, mechanical care of the car and other similar factors. Other methods used include a $50 fine—never remitted; impounding of cars; and jail sentences ranging from 24 hours to 100 days.

Professor Yandel Henderson of Yale University gave an analysis of exhaust gas hazards with particular reference to conditions under which garage mechanics work. He views the present situation as very serious and advocates as a solution some type of exhaust muffler which will shoot the exhaust gases upward instead of downward. Tests which he has made show that this would solve the problem.

Accidents Analyzed

One feature of the conference was the detailed analysis of traffic accidents in Connecticut presented by Professor Tracy of Yale University and Mr. Stoeckel. The figures given were the result of carefully kept records and of a very thorough study of the data developed. While useful in connection with specific Connecticut problems, they are interesting chiefly as an example of what accident statistics should be. They should serve as an excellent model for future work along similar lines in other states.

Funds to defray the expenses of the conference and to provide for printed proceeding were donated by Helen Hartley Jenkins of New York City, through the Hartley Corporation, of which Mrs. Jenkins is president. The last day of the meeting was devoted exclusively to problems relating specifically to the State of Connecticut.

Summing up the work of the conference and making his proposal for carrying on work along similar lines, Mr. Stoeckel said in part:

The automobile is a free agent for the expression of its operator's character and desires. It can be made to go fast or slow, straight or crooked, forward or backward at will. The automobile injected temperament into traffic.

Any plan for motor vehicle accident prevention must, as its basic and fundamental idea, take the mind factor into account, must recognize that "many men have many minds" and direct its efforts along corresponding lines. Also it must be recognized by any system or plan that nothing can be accomplished without an enthusiastic public sentiment against accidents. A universal sentiment eventually will come into being but it is not as yet strong enough to make accomplishment certain. Therefore, preparation to meet a demand for methods of prevention must be in form available for a territorial unit.

For the purposes of brief discussion, the subject is now divided into three main heads. The first will include means to be used in an effort to make the field of traffic simpler so that mind action may be less accurate and exact and still not, by any ordinary mistake, create an accident. Under this can be included:

1. Diagnosis of traffic through classification of statistics. A plan with necessary report blanks can be drafted in such form as to fit into the needs of any unit of government. Thus statistics soon may be available, from the study of what remedial measures can be applied.
2. A draft of a uniform traffic law. Such a law must extend to and cover all participants in traffic but is not to be a law in the sense of a complete document to regulate traffic everywhere. It should be a "unit paragraph law" in which can be found carefully drafted clauses covering each and every known experienced traffic difficulty, so that there will be available to each law or ordinance-making body authoritative language applicable to any safety traffic problem.

Flexible Plan Outlined

The difficulty with all uniform laws heretofore published appears to be that each is so complete and final that it arouses opposition and insures defeat by its very completeness, including as it does many features not applicable to traffic conditions other than in restricted locations. The principle of the right of selection of fit parts has not been recognized. It must be. The available material must include and cover many new and, as yet, undeveloped ideas. There must be as many suggestions made as possible.

3. The principles of safety highway engineering should be made uniform and available for ready application on city streets and country roads, so that rules for inspection and correction of conditions unfavorable to the participants in traffic may be obtained.

The second main head includes those means which are distinctly educational, to bring the average mind action up to a higher plane.

1. Education for the public.

The third great class will include discipline, and in the subdivision of this head there will be naturally included:

1. Discipline by suspension and revocation of licenses with a thorough discussion of the advantages of discipline by suspension of operators' licenses and registrations. It will eventually be necessary not only to discipline operators, but also owners of cars, in order to meet the growing menace of reckless driving. One of the suggestions along this line is bound to involve authority to take a car off the road where it has been used or is being used in such a manner as to endanger the public.
2. Discipline by courts. This will become standardized and more severe as time goes on. The discretion of judges must not be interfered with. It must be retained unimpaired.

SWISS automotive trade in both imports and exports was larger for the first six months of 1923 than for the same period last year. Imports grew in value from 13,700,000 francs to 17,800,000 francs, while exports rose from 1,400,000 francs in 1922 to 1,600,000 francs in 1923. Passenger car imports comprise about three-fourths of the total.

Armorcote Baking Enamel Now Being Made in Limited Number of Colors

Armitage product can be furnished in blue, maroon and green. Three coats are applied over black primer which is put on by usual floco method. Oven temperature of 275 deg. Fahr. used.

DEMANDS for finishes which will combine excellent durability with the selling advantage possessed by a car painted in colors are beginning to be met, as a result of much labor and research work on the part of concerns which have for many years been supplying enamels, varnishes and other similar materials in large quantities to the automotive industry.

A recent development in this line which seems likely to attract much notice in the industry is the announcement that the John L. Armitage & Co. of Newark, N. J., is prepared to supply under the trade name of Armorcote not only the black baking enamel, which it has furnished in large quantities for many years, but also colored baking enamels which have similar qualities.

At present the colors available are limited to blue, maroon and green. These enamels are flowed on in the same manner as black and are baked in the same way, except that the permissible maximum temperature is limited to 275 deg. Fahr. They are recommended for application over a black enamel primer coat which is baked for 50 min. at 450 deg. Fahr. in the case of an all-steel body or for 1½ hr. at 275 deg. Fahr. in the case of a wood frame body.

It is not claimed that the color enamels have the same durability or quite such high luster as the high bake black enamels, but they are said to be considerably more durable than ordinary varnish jobs and to combine most of the other advantages of black baking enamels, including possibility of rapid application, which is one of the most important characteristics of this class of finishng material.

Body Preparation and Primer Coat

Preparation of the body or part to be finished with Armorcote color enamel is precisely the same as that required for black enamel. The surface must be free from rust, grease or foreign matter and as smooth as is possible commercially in order to avoid surface imperfections in the finished product. The primer coat is flowed on and baked in the same way as the first coat of black enamel for a job finished entirely in black. This primer coat is baked at 450 deg. Fahr. if the body will stand this temperature. If not, a black enamel intended for baking at 275 deg. Fahr. is used.

The vehicle used for the color coats is china wood oil, and the pigment is a finely ground light gravity color selected because it is comparatively unaffected in color by the baking to which it is to be subjected. Three coats of color are required over the black priming coat. The final coat has much less pigment than the preceding coats in order to get freer flowing and to give a higher luster.

After the primer coat is applied and baked the first color coat is applied by the same method. The work is allowed to drain 20 min. before baking and then is baked for 90 min. at 275 deg. Fahr. No rubbing precedes or follows the first color coat. When this coat is baked, the second color coat is applied in the same manner and baked for the same length of time at the same temperature, namely, 275 deg. Fahr.

After the second color coat is dry the body is rubbed down with pumice and water and then is ready for the final coat. This is the only rubbing required. The final coat is flowed on in exactly the same manner as the earlier coats and is, like them, baked for 90 min. at 275 deg. Fahr. to produce the finished body. A good luster is obtained, but not quite the same as is secured with all black coatings. Armorcote manufacturers feel, however, that the public is willing to accept less luster with colors than has been demanded with black enamels.

Cost Somewhat Greater

While the cost of materials used in color enamels is something more than double that of black baking enamels, the cost per car involved in their use is said not to be materially greater. Substantially the same equipment that is used for black can be used for colors, but ovens of the box type can be employed in place of tunnel ovens if for any reason they are preferred, especially when only a relatively small proportion of the total production is finished in color.

One large car producer is understood to be using Armorcote color enamels on some production jobs which for the present are being finished outside his own factory, while others are giving the new colors extensive tests with a view to later adoption for at least some models. The Armitage Co. does not expect, however, that color enamels will entirely supersede black enamels, especially because the black has proved exceptionally durable in service.

Armorcote color baking enamels are said to be especially well suited to large quantity production car finishing because of the ease and rapidity with which they are applied by the floco method. The enamels also possess exceptional elastic and adhesive qualities which add greatly to their durability.

A METHOD by which it is claimed to be possible to increase the fuel-lifting force of the vacuum in the intake manifold has been worked out and practically applied by the Pallas Carbureter Co. of Germany. It consists in the use of an unusually long tube between the inlet manifold and the vacuum tank, a certain length of this tube being coiled, with a small, light check valve in the connection to the manifold which closes when the pressure in the tube is less than that in the manifold.

It is claimed that owing to the surging of the column of air in the tube there will be a greater vacuum at the tank end than in the manifold. The tube used is 80 in. long and has a bore of 6 mm. (about ¼ in.). It is said to be essential that the cross section of the tube be the same throughout its length and that there be no flattening or dents at the coils.

Brill 38-passenger motor railcar

New Gasoline Railcar Is Developed by J. G. Brill Co.

Is mounted on two four-wheel trucks, power being applied to all wheels of the forward unit. Crankshaft is exceptionally rugged. Semi-automatic air braking system is used. The vehicle carries baggage as well as passengers. Powerplant is mounted at front.

A MOTOR railcar having a seating capacity of 38 passengers in the passenger compartment and 5 in the baggage compartment, making a total of 43, is being manufactured by the J. G. Brill Co. This concern some time ago took over the railcar department of the Service Motor Truck Co., and the car turned out is a development of the designs originated by the Service Company.

The car is mounted on two four-wheel trucks, power being applied to all four wheels of the forward truck. The powerplant, which comprises a four-cylinder heavy-duty engine, clutch and change speed gear, is mounted at the forward end of the car, all but the radiator being inside the baggage compartment.

The engine is of 4¾ in. bore and 6 in. stroke and is thus of the same size as currently used in 5-ton motor trucks. The power output is 41.8 hp. at 800 r.p.m.; 51.3 hp. at 1000 r.p.m.; 59.1 hp. at 1200 r.p.m.; 65.8 hp. at 1400 rp.m., and 68 hp. at 1500 r.p.m. The valves are located in the cylinder head and are operated through tappet levers and pushrods extending up the sides of the cylinders, inclosed in steel tubes.

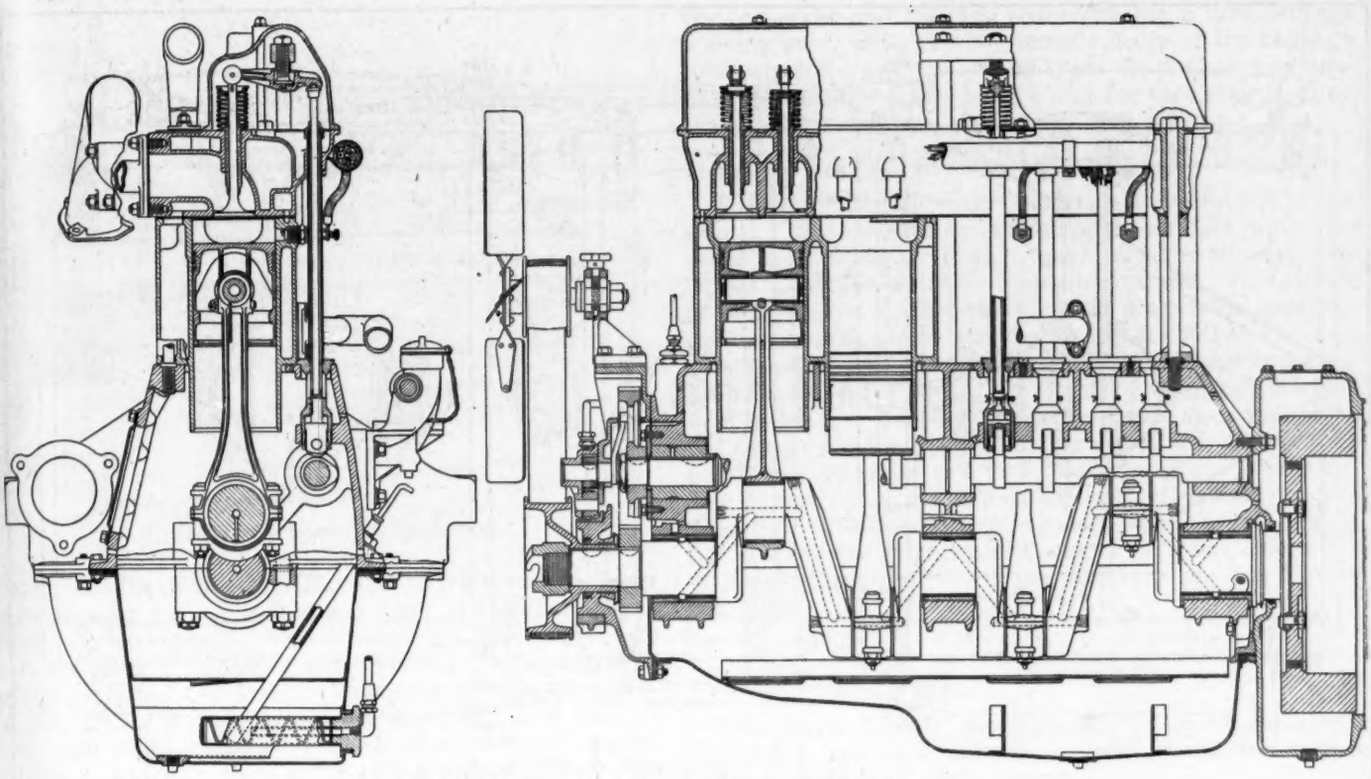
A feature of the engine is the very rugged crankshaft. All bearing journals of the latter are 3 in. in diameter. Crankpin bearings are 2¼ in. long, while the three main bearings have a combined length of 10¼ in. The piston pins are clamped in the upper end of the connecting-rod and have their bearing in the piston bosses, this arrangement permitting of a greater length of bearing than where the pin is free in the rod.

Lubrication of all main and connecting-rod big-end bearings is by pressure. The pressure on the oil feed is automatically regulated in accordance with the load on the engine, the regulator being connected to the inlet manifold. A supply of 2½ gal. of oil is carried in the oil well.

Engine Accessories

Gasoline is carried in a 50-gal. cylindrical tank of heavy-gage steel arranged underneath the car, with a filler on the outside of the car. Fuel is supplied to the Stromberg plain-tube type carbureter by the vacuum feed system. Ignition is by an Eisemann high-tension magneto with impulse coupling for easy starting. The radiator is of the tube and continuous fin type, with a frontal area of 715 sq. in. and a depth of core of 4⅛ in. The tanks and frame of the radiator are bolted together and the core is demountable. A four-blade 20-in. fan is mounted back of the radiator and is driven from the crankshaft through a 2-in. flat belt. The water pump, of the usual centrifugal type, delivers 25.5 gal. of water per minute at 1000 r.p.m.

Back of the engine there is a multiple dry disk clutch which is held in engagement by two concentric coiled springs. Back of this and forming a unit with the engine is a conventional three-speed heavy-duty transmission gear, which, however, comprises no reverse gear. All gears in this transmission are of case-hardened nickel steel



Cross and longitudinal section of engine

and mounted on nickel steel, splined shafts carried in taper roller bearings. The reduction ratio of the low speed is 4 to 1 and that of the intermediate, 1.76 to 1, while the third speed is a direct drive. The gears vary in width from 1¼ to 1¾ in.

Powerplant Removable as Unit

The entire powerplant is mounted on the frame in such a manner that it can be removed as a unit. An electric generator of 300 watts capacity is carried on the car and delivers current at 12 volts to a storage battery of 160 ampere-hours capacity. The engine is started by means of an electric starting motor which drives through a Bendix screw shift to a gear ring on the flywheel.

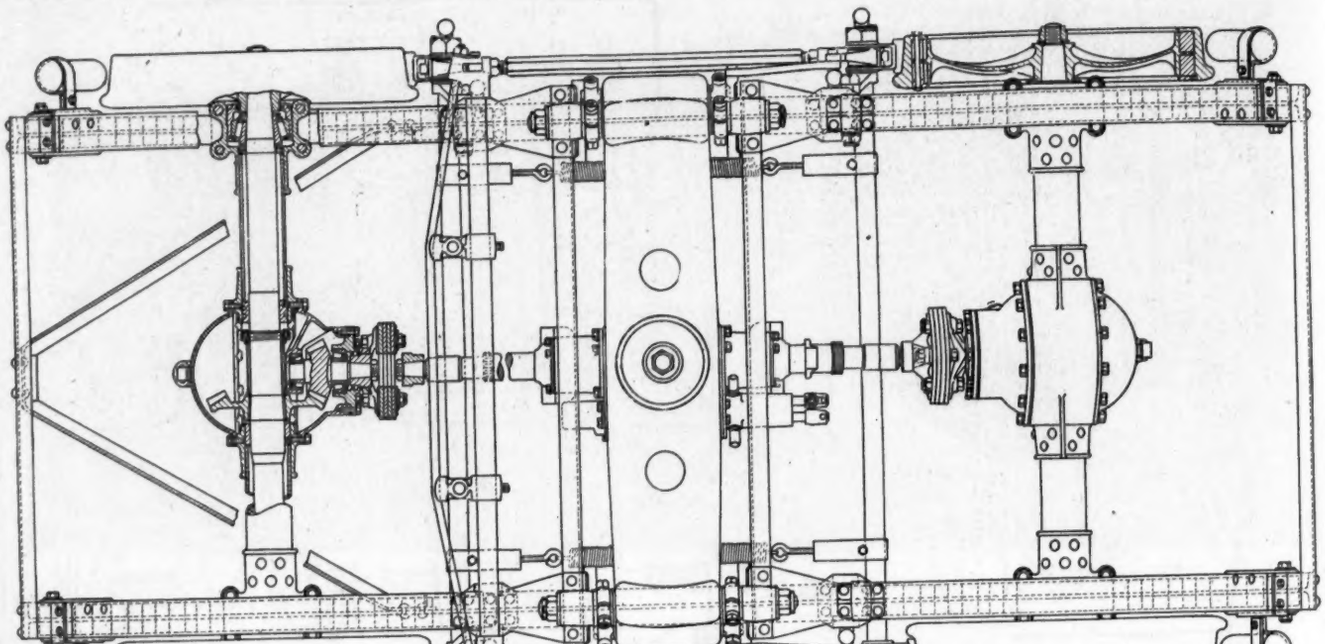
From the primary gearset there extends a propeller shaft to a secondary transmission at the center of the driving truck, this transmission being mounted in the cast steel swing bolster of the driving truck. This secondary transmission gives two changes of forward speed, which in conjunction with the straight through drive in the primary transmission gives car speeds of 26 and 35 m.p.h. respectively. In addition, the secondary transmission provides for reverse motion. The reverse speed is equal to the higher of the two forward speeds, viz., 35 m.p.h. As each of the speeds in the secondary transmission can be combined with any of the speeds of the primary, a total of six forward and three reverse speeds is available. The forward drive portion of the secondary transmission is of the constant mesh type, engagement of the gears being by positive clutches. These gears are cut with helical teeth and have a face width of 2 in. The materials and general principles of construction are the same as in the case of the primary transmission.

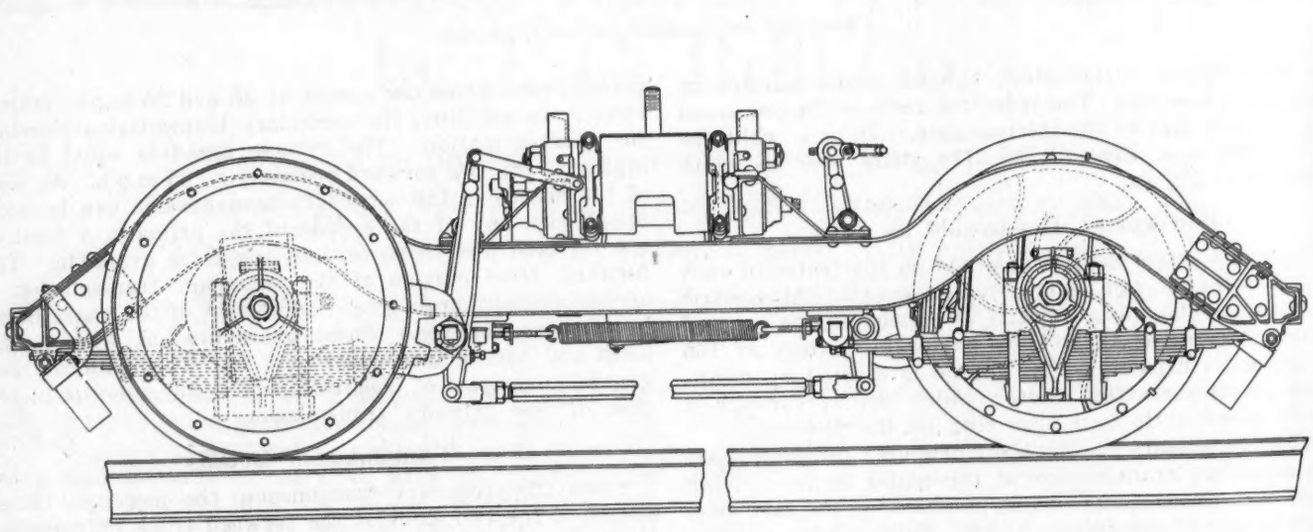
Transmission Details

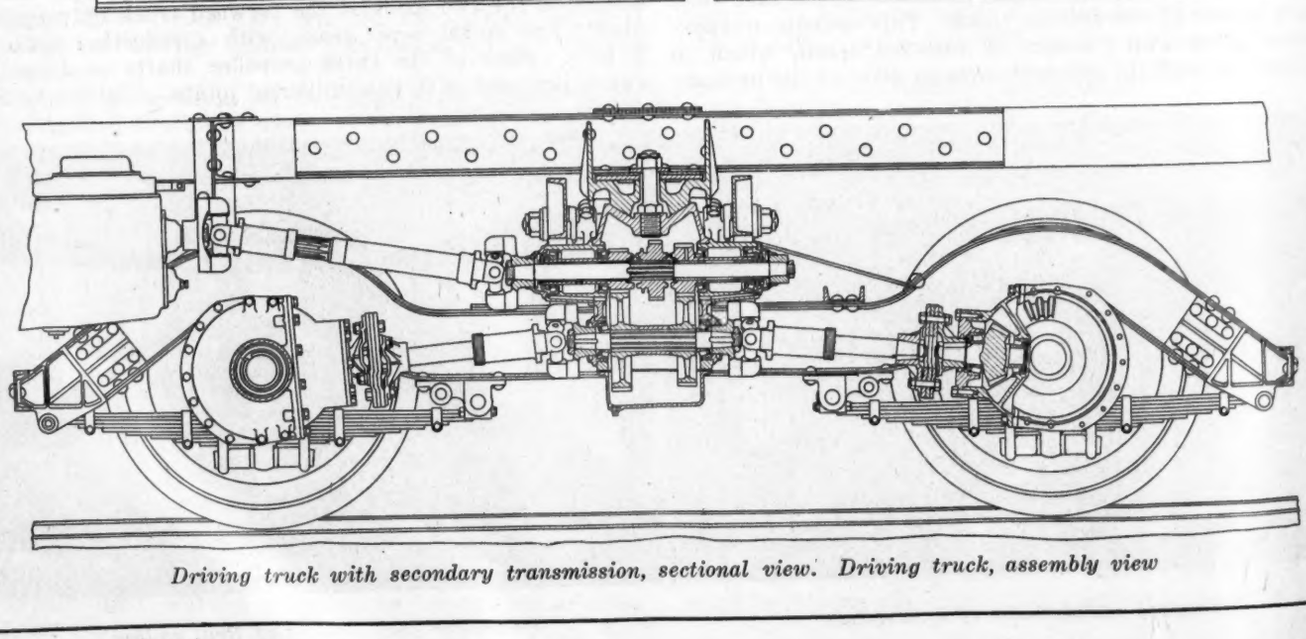
From the secondary transmission the power is transmitted to the two axles of the forward truck by propeller shafts and spiral bevel gears, with a reduction ratio of 2 to 1. Each of the three propeller shafts used on the car is provided with two universal joints. The trucks are

Baggage compartment of Brill railcar

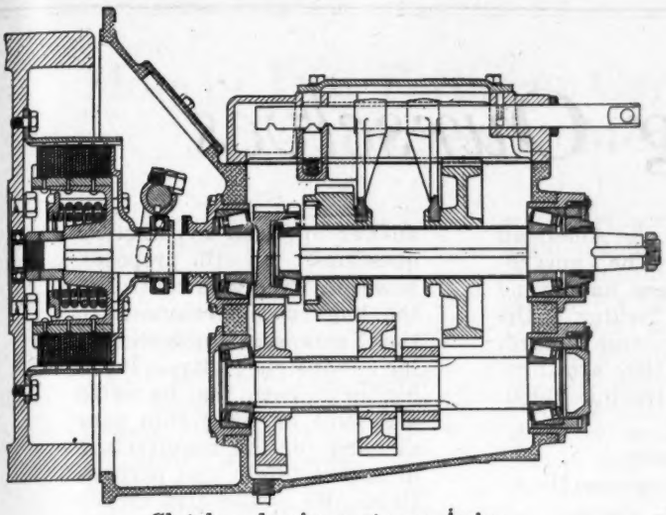
Passenger compartment of Brill railcar







Driving truck with secondary transmission, sectional view. Driving truck, assembly view



Clutch and primary transmission

known as the Brill No. 81, the driving truck being designated by the addition of the letter M and the trailing truck by the letter T. These trucks are pivoted to take curves having a radius of not less than 70 ft. measured to the center of the track. The truck frames are made of 7-in. 20 lb. p. ft. I beams which extend fore and aft over each axle inside of the wheel supporting channel transoms, which in turn carry swing motion links. The I beams are tied at the ends by cross channels and gusset plates.

The axles are made of alloy steel, heat-treated, and are 3 in. in diameter, the car wheels being secured to them by taper and key. They are carried in taper roller bearings which are mounted in bearing housings secured to the axle housing. The truck frames have a sweep-up over the axles, as clearly shown in the side view.

Half-elliptic type underslung springs of silico manganese steel support the truck frames on the axles. These springs are 44 in. long and 3 in. wide. The wheels have cast steel centers and are provided with rubber cushioning elements, a design that was developed by the Service Motor Truck Co. and has been illustrated in these columns. Rolled steel tires, 30 in. in diameter, are fitted.

Braking Equipment

There is a shoe brake on each wheel, applied by a Westinghouse semi-automatic air system through inside-hung linkage. A conductor's brake valve is located in the rear vestibule, while a hand brake lever for the operator is provided at each end of the car. Air is pumped up by a Westinghouse mechanically driven air compressor controlled by an air governor.

The car is of the combination passenger and baggage type and is of the Brill company's light design. Its length over the pilot is 43 ft. 5 5/16 in. and its width over the posts, 8 ft. 4 in. The baggage compartment has an inside length of 11 ft. 3 in. Each truck has a wheelbase of 6 ft. 8 in. and the distance between truck centers is 22 ft. 2 in. The height from the rail to the top of the roof is 10 ft. 5 9/16 in.

The general construction of the car body is similar to that of regular railroad coaches. The underframe and the body frame are of steel construction throughout and the sides and ends of the car below the windows covered with sheet steel. In the passenger compartment there are nineteen stationary seats which are upholstered in imitation leather. At the rear end there is a vestibule which can be entered by means of steps from both sides. The passenger compartment is entered from the vestibule through a central swing door. Communication between the passenger and baggage compartments is also through a swing door, while the two outside doors of the baggage compartment are of the sliding type. In the baggage compartment are the engine hood, a seat for the driver, folding seats for passengers, a stove and a sand box.

Control Features

The seat of the driver or motorman is to the left of the engine. He operates the clutch with his foot while the gears are shifted by hand. Spark and throttle are controlled by finger levers in the usual manner. In addition to these control devices there are an accelerator pedal, an emergency brake lever and the air brake control.

It is of interest to calculate the piston displacement per ton-mile under full load. The car itself weighs 29,000 lbs., or 765 lbs. per passenger. Adding passenger weight at the rate of 150 lbs. per passenger, and 50 lbs. baggage per passenger, we arrive at a total loaded weight of 36,600 lbs. The engine has a piston displacement of 425 cu. in., the reduction ratio between crankshaft and driving axle is 3.6 to 1 and the drive wheel diameter is 30 in. Hence the piston displacement under gas pressure per ton-foot of car motion is

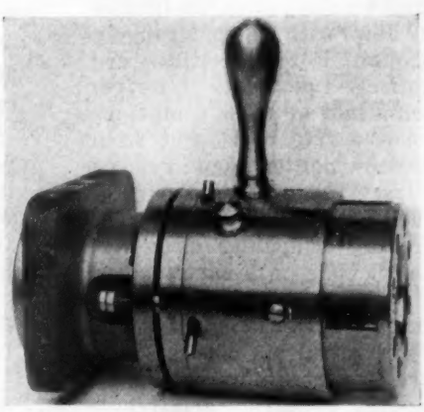
$$\frac{3825 \times 3.6 \times 425}{36{,}600 \times 30} = 5.32 \text{ cu. in.}$$

This figure is only about one-sixth the corresponding figure for passenger automobiles and should result in a comparatively high fuel economy.

New Die Head for Turret Lathes Has Little Overhang

THE Eastern Machine Screw Corp. of New Haven, Conn., has designed a modification of its Style CC self-opening die head for use on Warner & Swasey 2-A and 3-A turret lathes. This new head is equipped with a special tool holder to fit the hollow hexagon turrets of these machines, and the holder is so designed as to bring the die head close to the turret, with a minimum amount of overhang.

The adjustable pull-off feature of these heads is said to be important, in that the operator needs not advance the turret in exact conformity with the lead of the screw cut. He simply follows the feed of the head approximately until the point of tripping is approached, when the advance of the turret is stopped, and with the head continuing to advance, it opens at the proper point. The advance of the turret, therefore, may be considerably behind the advance of the die head without affecting the lead of the thread cut.



H. & G. self-opening die head for Warner & Swasey lathes

Just Among Ourselves

Negro Exodus Forces South to Use Tractors

MORE modern agricultural methods may be forced upon the South by the exodus of negro labor to the North. Ever since cotton became king, the small planters have tilled their few acres with the aid of a mule and a colored worker. Now the laborers are leaving, and the mule is somewhat untrustworthy when left to its own devices. Something has to be done and the farmers are turning to tractors. More of them are going into certain sections of the South than ever before and a good many are being sold on the cooperative plan. Groups of planters whose lands adjoin are tearing down their fences, clubbing together to buy a light tractor, and thus supplanting the mule. The more intensive cultivation which thus will be possible is likely to increase the yield and the added profits will more than pay for the machine the first year.

Russia Is Buying Ford Products on Barter Basis

NOT only are tractors going into the South in larger numbers, but the Ford Motor Co. reports a somewhat substantial and steadily increasing tractor demand in Russia. The machines are being sold to the Soviets through four trading companies, all headed by Jews with whom, strangely enough, Ford's relations are entirely pleasant. Representatives of these companies made a trip to Detroit from Moscow not long ago in eleven days. They traveled part of the way by airplane. The trading companies deal with the Soviets on a barter basis, accepting grain and other things in exchange for the Ford products. These goods are converted into cash in adjoining countries and remittances made to the American manufacturer. The government officials are having no difficulty in "selling" the peasants on the value of farm machinery and they are turning not only to tractors but to touring cars.

Ford Not So Eager as He Was for Muscle Shoals

HENRY FORD is not spending any sleepless nights worrying about whether or not he is going to get Muscle Shoals. He is represented by his associates as having reached a frame of mind where he doesn't care much one way or the other. He doesn't really expect the Senate at the present session to pass the House bill accepting his offer, although he thinks it may be done to have at least one piece of what he considers constructive legislation appear on the records of this Congress. It undoubtedly is true that Mr. Ford is not as eager for Muscle Shoals as he was two years ago. If he had been able to launch his enterprise then he could have absorbed gradually the supply of water power which was steadily expanding; but if he undertakes the gigantic project now he will have to take over the power supply at its peak and much of it will go to waste for the time being until he can find uses for it.

Still Plans to Build Big Industrial Center

THE question has been asked many times of late whether Mr. Ford has altered his plans for the use of Muscle Shoals. It can be said in a general way that he hasn't, but they are no more completely developed than they were when he made his original offer because he is not in the habit of devoting much time to finding the answer to purely hypothetical questions. He still proposes, however, if he gets control of the huge power reservoir in the Tennessee, to develop a big industrial city. It is highly probable that he would use some of the cotton near at hand for the manufacture of cotton fabric and perhaps tires. He would also reopen the bauxite deposits which were abandoned long ago, and he is confident that he could extract aluminum from them profitably. Inasmuch as he harbors no resentment against the Alabama Power Co., it is quite likely he would sell a considerable part of his power surplus to that corporation provided it was resold at what he considered a reasonable price.

More Efficient Service Station Tools Needed

THE maintenance equipment show at Detroit next month will serve an exceedingly valuable purpose if both manufacturers and dealers take full advantage of the opportunities it offers. Machine tool manufacturers apparently have not yet grasped the importance of the automotive service field, which is growing bigger each year. They have directed most of their efforts toward the production of improved factory equipment, with the result that even the best equipped machine shops and service stations still are sadly in need of economical labor saving devices. Standard machine tools are too expensive, considering the service hours they can be used in the average shop, and second hand tools are seldom satisfactory. This is one field in which the industry has lagged behind but there are evidences that somewhat belated consideration is being given it. The motorists of the country want and are demanding more effi-

More or Less Pertinent Comment on Topics of Current Interest to Men in the Industry

cient and economical maintenance for their cars.

Automatic Gear Shift Gaining in Popularity

WITH four-wheel brakes safely over the hill, as it were, and with balloon tires on their way, motor car manufacturers are turning their attention to other mechanical changes which will be interesting and which will provide selling points for dealers even though they may be neither novel nor sensational. The automatic gear shift will be one device which will make long strides toward popularity this year. Producers believe arrangements of this character will appeal strongly to drivers once they are understood, because getting a lot of levers out of the front compartment will enhance riding comfort. It often seems that manufacturers have been much more concerned about providing plenty of room and comfort in the rear seat than in the front, but we venture the assertion that when the family bus is run out of the barn it carries two passengers in the front seat alone much oftener than it does its capacity load unless the family is unusually numerous.

Renaissance of Interest in 8-Cylinder Engines

POWER plant design always is interesting and changes in trend often are more rapid than we realize. The four-cylinder engine has lost much of its vogue in the past two years and the six has come rapidly to the front. It can be predicted with reasonable assurance that there will be several more inexpensive light six models in the field before autumn than there are today. But oddly enough, there has been of late a renaissance of interest in eight-cylinder motors. Several companies are experimenting with them and one prominent motor manufacturer is said to be about ready to announce a new eight. The new lines, if it finally is decided to produce them, will not be expensive, but rather the reverse. An effort will be made to price them considerably under $2,000.

Bed Time Radio Stories on Service Might Be Hit

THE Reo Motor Car Co. stole a march on all its rivals by being the first concern in the automotive industry to establish a radio broadcasting station at its plant. One of the features of its program will be music provided by a glee club and orchestra made up of Reo employees. It is attempting to register REO as its signature, but it is doubtful whether it will succeed, although the Chicago *Tribune* has taken WGN, standing for "the world's greatest newspaper," as its signature. A good many persons have wondered why the General Motors Corp. did not establish a high powered station on the top of its huge office building in Detroit from which to put on the air news of its innumerable interesting activities. Thousands of radio enthusiasts also are motorists and it is quite possible they would be interested in "bedtime stories" on how to keep their cars running most efficiently at the lowest cost.

Belated Interest Shown in Two Big Conferences

THE rank and file of the industry are beginning to take a somewhat belated interest in the International Motor Transport Congress which will be held in Detroit next month and the traveling Pan-American Road Congress which will convene in Washington almost immediately afterward. Together they will bring to the United States representatives of practically all nations interested in motor vehicles, and their visit cannot fail to give them a keener conception of the preeminence of America in all automotive lines. By helping them solve their problems we shall be opening new sales outlets for ourselves. The Pan-American conference has been characterized by one publicist as "the first really constructive help ever given Latin America by this country," and there is evidence that it is so regarded by the nations to the south of us.

Jordan Makes Financial Statement Really Interesting

ONE of the most interesting financial statements which has appeared in a long time is that of the Jordan Motor Car Co. While it discloses current assets of $2,526,793, including $1,056,087 in cash, with current liabilities of only $271,674, which is about as good a showing as anyone could ask for, it is chiefly remarkable because it "can be understood by any child who has passed the fifth grade." That certainly is not true of most financial statements. A good many of them, which are prepared in perfect good faith, give the impression of being designed to conceal rather than impart information. Preparation of these analyses once a year is one of E. S. Jordan's personal hobbies. It must be admitted he does it well. Making a financial statement interesting and understandable to the average person is as tough a job as elucidating the Einstein theory.

J. D.

Ford Upsets Precedents in Interest of Lumber Conservation

Discards time worn methods to effect great reduction in waste. Body parts are cut from unedged green slabs and are kiln dried afterward. Crooked logs, swell at butt and even branches 4 in. or more in diameter, formerly discarded, now utilized effectively.

FORD has upset another precedent. By simply applying common sense in the minimizing of waste heretofore regarded as more or less inevitable in the supplying of wood parts for automobile bodies, he is reported to have demonstrated savings of 35 to 50 per cent. The essence of his plan is simply to saw up the logs, as they come from forests which he controls, in such a way that waste is reduced to the lowest feasible amount.

Instead of virtually throwing into the discard parts of slabs cut from the log in order to get boards with parallel edges, the parts of the body which would in any case be cut from the boards are marked out on the untrimmed slabs, following the irregular contours to a large extent, so that ultimately little except extreme edges is wasted. Parts, such as the swell at the butt, and branches not less than 4 in. in diameter as well as logs which formerly were regarded as too crooked to be cut to advantage, heretofore largely wasted, now are used to good advantage.

A statement issued by the Ford Company setting forth the new system in more or less detail is given below in slightly edited and condensed form:

By methods new to large scale lumbering and woodworking the Ford Motor Company has installed a new wood sawing system which has demonstrated savings of from 35 to 50 per cent in the cutting of fine hardwood for automobile body parts by sawing them direct from unedged planks as they come from the log. This is an achievement in wood conservation as important as the generation has produced. The system is already on a production basis at the saw mills and woodworking plants of the Ford Motor Company at Iron Mountain, L'Anso and River Rouge.

Waste Reduced Materially

In the past body parts have been made out of kiln dried boards, which were sawn to uniform size and grade. Much of the youngest and best wood was wasted in this process, and in cases where the log was curved or irregularly shaped the scrap often exceeded the merchantable timber obtained.

Planks which vary according to the shape of the log with the bark left on are cut from a log in parallel planes as shown in Fig. 1. These are sent to lay out tables where patterns for various parts are marked out until the plank is completely covered with patterns right up to the bark. See Fig. 2. Any irregularities, such as the swell at the butt, are taken advantage of in laying out curved or irregular parts. Instead of trimming off a large piece to avoid a knot or check, the layout men simply go around it. This method permits the utilization of nearly all the wood, the scrap being extremely small. The various parts are then cut out with a high speed band saw, as shown in Fig. 3.

Under conventional methods the proportion of board feet in body parts by actual measurement to the wood content of the entire tree is distressingly low. One-third of the tree, the limbs and top, is wasted before the log gets to the mill. Only 55 to 60 per cent of the log actually is converted into body parts.

Old and New Methods Compared

A sample tree was cut up into body parts under the new method and the results compared with the amount of parts which the old method of edging and sawing would have given. The results were so startling that the system was put into effect at the various Ford plants as soon as possible.

The tree gave two irregularly shaped logs which scaled 238 board feet. There were also a number of branches and the top. The best use that could be found for these under conventional lumbering methods would be to send them through the wood distillation plant. Instead they were sawed up and marked for parts sawing.

After the logs had been sawed by the Ford method and the patterns laid out, the planks were measured up according to the boards which could be obtained under the old edging and trimming method and the number of available parts in each computed. All parts were reduced to board feet in actual lumber content. The edging and trimming method gave 127 board feet of body parts. Under the Ford system the same planks yielded 204, a gain of 77 board feet or 60 per cent.

Limbs and top, hitherto considered worthless except for distillation or fuel, gave 170 board feet additional, making a total of 368 board feet of parts as against the 127 board feet obtainable under the old method, an increase of 290 per cent. From now on all hardwood limbs and tops not under 4 in. in diameter will be brought to the Ford mills.

Saving in Logging Operations

Another saving possible under the new system is in the logging operations. Heretofore much timber has been sacrificed in an effort to get straight logs of standard length. Trees have been cut off at a height of from two to three feet in order to avoid the swell at the butt. They now may be sawn 6 inches from the ground. It no longer is necessary to avoid the crotch of a tree. The shape of the planks is of no consequence.

Body parts produced under this method are superior to those sawn out of edge and trimmed boards, as the grain can be followed more advantageously. This is especially true of curved parts, a large number of which are found in body construction. See Fig. 4. Much of the youngest and best wood in the tree was wasted under the edging

method, but this is now largely salvaged and put into useful service.

This practice of cutting the parts to rough shape while the wood is still green has also simplified the whole process of kiln drying, reducing the spoilage to a noticeable degree and shortening the time required by approximately 10 days. Old time lumbermen and wood workers who freely predicted that the new system would break down at the kilns were rather chagrined to find that the parts came through with less warping and end-checking than the boards from which parts formerly were sawed.

It has been estimated that this new system will make the Ford forests last one-third longer, possibly indefinitely, if proper methods of reforestation are followed. A young and vigorous growth of timber is constantly coming up and these trees will not have to reach full maturity before they become available for body parts manufacture.

Lumber Conservation Urged

In the interests of forest conservation the Ford Motor Company makes public of the new method. It is hoped that other companies will take advantage of the economies offered. It would be a conservational measure of national importance if saw mill operators instead of sawing boards would saw complete parts or dimensional stock. Automobile body companies, furniture factories and other wood working industries could have their parts made right at the mill, thus making an enormous saving in lumber, in addition to which they would profit by lower freight rates. The general scheme of the system is universal in its application.

New Practice Is Profitable

To the Ford Motor Company it has been found unusually profitable because the company controls every step in the manufacture of body parts from the standing timber to the assembly line. Here are four industries usually separate and distinct (1) Logging, (2) Saw Mills, (3) Dry Kilns, and (4) Body Shop, to which may be added (5) the Wood Distillation plant at Iron Mountain, Mich. They are all united under one management with but one end in view.

As the company's timber requirements already have reached one million board feet a day the possible savings under this new system may be estimated at several hundred thousand feet daily. But more important still, it appears to have insured a permanent supply of wooden body parts at a time when the disappearing hardwood forests were a matter of public concern. This makes the process of great importance in the automotive field.

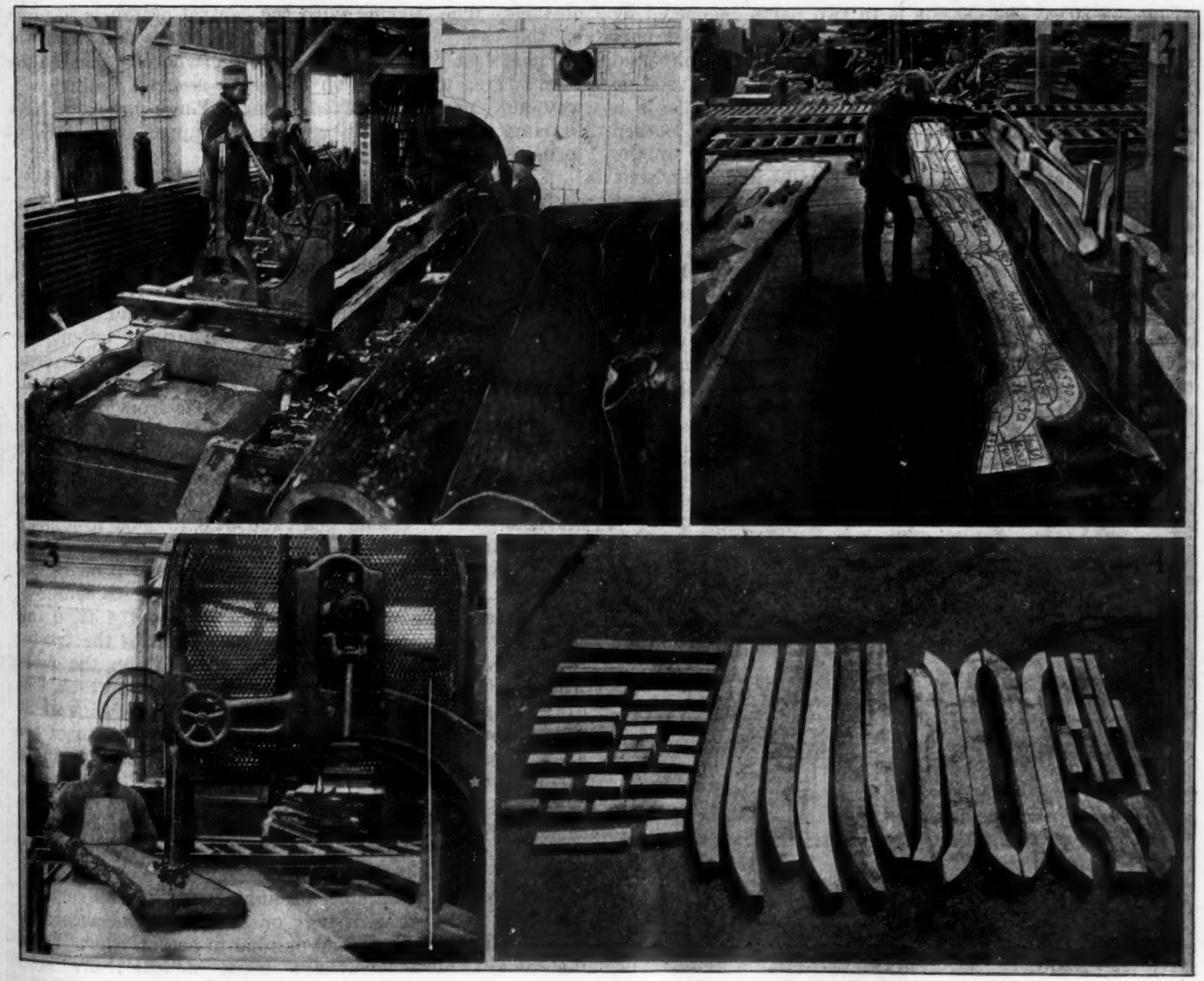


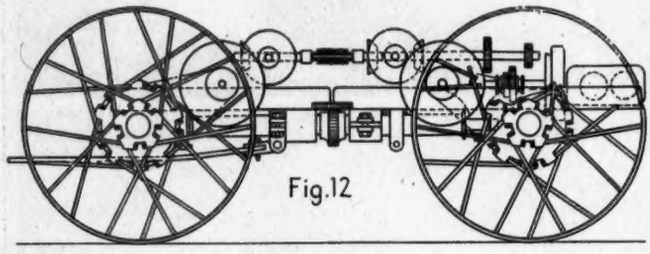
Fig. 1—Logs are sawed in parallel planes. The bark is left on. Fig. 2—Layout bench where parts are outlined on plank surface for sawing. Note how curved parts fit into irregularities of log section. Fig. 3—Cutting out parts with a high-speed band saw according to the marked outlines. Fig. 4—Parts sawn from the single plank shown on the layout bench

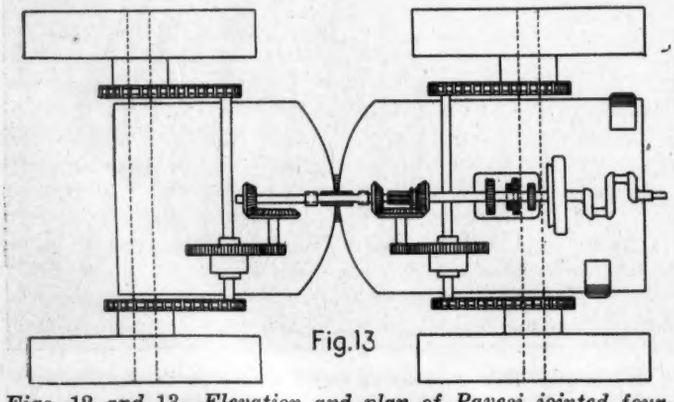
Four Different Tractor Types Developed for Use in Roadless Areas

Part II.

The Armstead snow-motor, Pavesi jointed tractor, Kegresse chain track and Renault multi-wheeled vehicle are typical of devices built for rough country work.

THE Pavesi articulated tractor developed by a concern in Milan, Italy, has been designed with a view to eliminating, as far as possible, the difficulties which have been mentioned, and deserves attention on account of the various constructional problems of which it gives a solution. The following is a brief description of the machine (Figs. 12-20): The chassis is in two parts connected by a cylindrical member, which is pivoted to the front part on a vertical axis and to the rear part by a universal joint. This arrangement allows each half to move relative to the cylindrical member. On the center of this is a pinion capable of revolving on it and gearing with toothed racks, formed on the under sides of each half of the chassis, the arrangement being virtually a double bevel gear. This gear coordinates the movements of the front and rear halves of the chassis. Steering is effected by means of the ordinary wheel and inclined shaft, which drives through bevel gears a shaft parallel to the axis of the front half; the shaft carries a chain wheel, and by means of a double purchase arrangement pulls the central member in either direction around its vertical pivot. This movement causes the rack on the front half to drive the pinion and thus causes a corresponding movement of the rear half of the chassis.





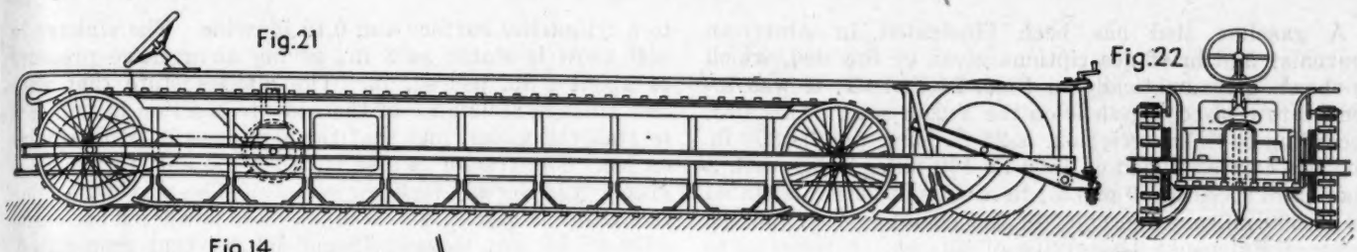
Figs. 12 and 13—Elevation and plan of Pavesi jointed four-wheel drive tractor

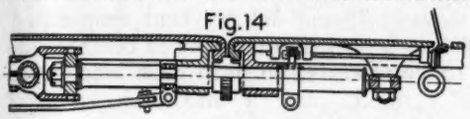
Considering the front half of the vehicle as remaining horizontal, any movement up or down of the rear wheels causes the rack to move in gear with the pinion and slightly advances the position of a wheel that is descending and retards that of a wheel that is rising. This tends to diminish the effective gradient in climbing a small obstacle. The gearing with the central pinion is assured by the two retaining brackets, of which that in front is made fast to the central member, whereas that at the rear is free to revolve on it, but is secured against endway movement by a fixed collar. These brackets have bearing surfaces which run on the upper machined internal faces of the chassis halves.

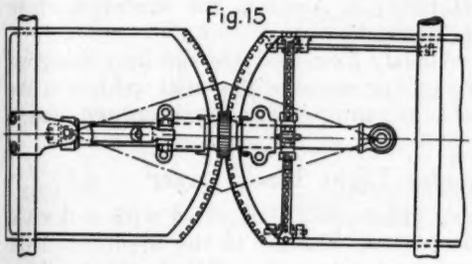
Details of Powerplant

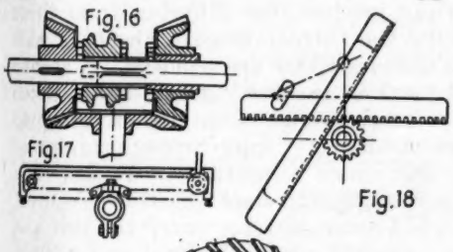
The motor has two horizontal opposed cylinders 130 mm. bore by 170 mm. stroke, and is capable of developing 30 hp. on gasoline at 950 r.p.m. It drives through a clutch to a two-speed change-gear box; the shaft from this carries a bevel-wheel running free, but capable of being engaged by a dog-clutch which can alternatively be engaged with the pinion keyed to the rear coaxial shaft; this forms the reversing gear. The secondary bevel wheels and shafts drive the two differentials and the shafts from these drive the wheels by chains. There is no intermediate differential. The two forward speeds are approximately 2 to 3 m.p.h. on first gear and 3.5 to 6 m.p.h on second gear; the speeds are the same in reverse. The reduction ratios are 35.5 to 1 on second gear and 84.8 to 1 on first gear. The driving wheels are 1.2 m. (about 4 ft. diameter) and the width of tread is 10 in.; the wheelbase is 2 m. (about 6 ft. 7 in.); the track measured from center to center of the treads of the wheels is 1.45 m. or about 4 ft. 9 in.; the under clearance is 18.5 in. The weight of the tractor is 3 tons, distributed to give 60 per cent on the front wheels and 40 per cent on the rear wheels at rest. The drawbar pull on the first gear amounts to 2.4 tons or 80 per cent of the weight. The maximum inclination of the axles to each other in plan is 35 deg. (Fig. 20), giving a turning circle of about 14 ft. 6 in. radius on the outside, or 8 ft. 9 in. on the inside. If one of the back wheels is raised, the front being kept level, the balance is reached at 58 deg. to the horizontal (Fig. 19); for the front half the balance is at 47 deg.

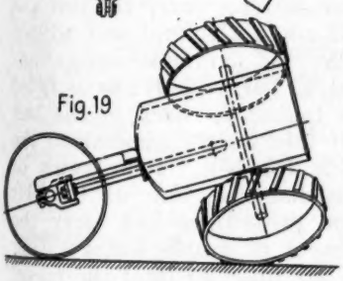
The wheels are of steel of light tangent construction; they can be fitted with lugs or rubber blocks according to the nature of the ground or road to be run over. From the diagrammatic drawings many details have been omitted, such as the springing arrangements and the eccentric gear for enabling the wheels on one side to be raised for plowing when two wheels run in the furrow.

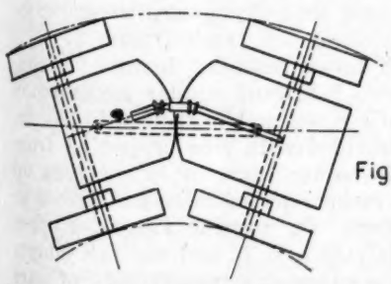


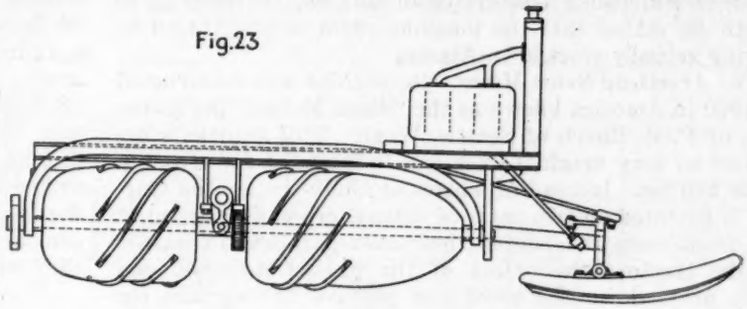


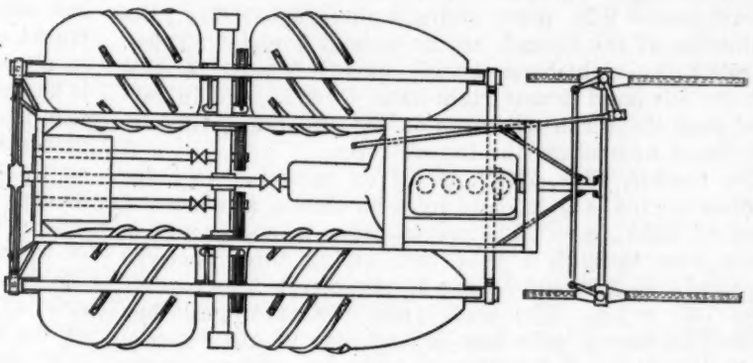


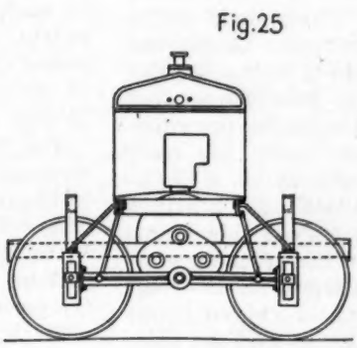


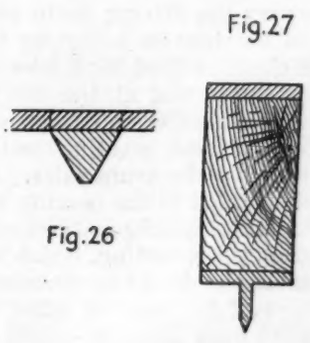












Figs. 14 *and* 15—*Detail views of connection between front and rear parts of Pavesi tractor*
Figs. 16, 17 *and* 18—*Details of steering mechanism of Pavesi tractor*
Figs. 19 *and* 20—*Illustrating flexibility of Pavesi tractor chassis*

Figs. 21 *and* 22—*Side and rear elevation of motor sled designed to replace dog sleds on Yukon trail*
Figs. 23 *and* 24—*Side elevation and plan view of Armstead snow motor*
Fig. 25—*Front elevation of Armstead snow motor*
Figs. 26 *and* 27—*Details of propelling helices and runners*

The Pavesi Truck.—This vehicle is constructed on the same principle as the tractor; it is capable of carrying a load of 2.5 tons; its weight empty is 3.5 tons; its wheelbase is 2.8 mm. (about 9 ft. 2 in.); and the mean width of track 1.70 m. (about 5 ft. 7 in.). The mean turning radius is about 5.5 m. (about 18 ft.). For use on desert sand the wheels can be fitted with extension tires increasing the width up to a total of about 20 in.

Before 1909 B. Hamilton constructed a machine for polar expedition work, but as the result of trials made in the Alps it was found unsuitable for the difficulties.

The Wolseley Motor Sleigh was constructed in 1909 with chain tracks for use in Captain Scott's Antarctic expedition; these sleighs were used in the earlier portion of the journey, but abandoned in the final dash for the pole.* Three of these motor sleighs were constructed, fitted with four-cylinder air-cooled motors developing 12 hp. at 1100 r.p.m. The bearing length of track was 9 ft. 6 in., the overall length was 14 ft. and the width 3 ft. 6 in. There were two speeds, of 1.75 and 3.5 m.p.h. respectively. The motor sleigh could climb a gradient of 1 in 2 (about 27 deg.).

*See Proc. Inst. Mech. Eng. 1918, pages 127-9.

A gasoline sled has been illustrated in American journals† and brief descriptions given of the sled, which is shown diagramatically in Figs. 21 and 22; it was intended to replace dog sleds on the Yukon trail. This sled, according to the description, is 25 ft. long, weighs 890 lb. and has carried a load of 1500 lb. 100 miles a day with a maximum speed of 30 m.p.h.; its radius of action is stated to be 600 miles. The chief of the postal service and the dean of Fairbanks University of Alaska, in replying to inquiries, stated that the machine could not be traced as having actually worked in Alaska.

The Armstead Snow Motor.—A machine was constructed in 1920 in America known as the "Snow Motor," the invention of F. R. Burch of Seattle, Wash. This vehicle is designed on very original lines and is intended for crossing snow and ice. Instead of wheels or chain-tracks, the tractor is mounted on two pairs of drums, projectile-shaped at the front ends and having their axes parallel to the axis of the tractor; the object of the projectile-shaped end is to press down the snow and prepare the surface for traction, which is effected by helical threads of truncated triangular section attached to the drums. There are six threads spaced 9 in. apart, giving a pitch of 4 ft. 6 in.; the inclination of the threads to the normal is about 29 deg. 30 min.; the right-hand drums carry left-hand threads and the left-hand drums right-hand threads, and in forward gear these run outwards on the underside; this arrangement neutralizes the lateral forces.

The tractor, Figs. 23-27, is driven by a four-cylinder gasoline engine, 4½ in. bore by 6 in. stroke, at a normal speed of 1200 r.p.m. The motor drive taken through a clutch goes through a gear box, giving three forward speeds of 1.95, 3.90 and 7.8 m.p.h. respectively; the reverse gives 1.67 m.p.h. The shaft from the main gear box enters the second gear box at the rear of the chassis, where the power is transferred to two secondary shafts running in opposite directions but parallel to the axis of the car and coming nearly to the center of the car, where they are coupled by cardan joints to the short shafts that carry the driving chain pinions. These short shafts run in bearings in a casting that can rotate at one end in bearings, carried by brackets fixed to a central tubular cross-member and at the other end in brackets secured to the side-members of the chassis and carrying the cross-member. These pivoting castings also carry the main bearings for the drum axles. Each axle carries a chain-wheel adjacent to the bearing and has two other bearings at the ends, which are carried by a curved side frame attached to the casting, which turns on the brackets so as to enable the drums to accommodate themselves to irregularities of the snow of other surface; the curved frame serves to distribute the weight of the chassis on the axle; the lateral thrusts are taken by slide blocks fitted in two pairs of slotted frames, front and rear, and secured to each other by cross-members.

Steering on Snow

Steering is effected by means of runners 4 ft. 7 in. long by 2 in. wide by 4 in. deep, shod with T-iron beveled to a narrow edge on the underside. Each runner is pivoted horizontally by a pin joint to the lower end of a steering arm, operated through the ordinary Ackermann gear by a steering wheel of the usual type.

The weight of the machine light is given as 5000 lb. and loaded 5500 lb.; the width of the track, center to center of drum, is 4 ft. 7.5 in.; diameter of drums at the bottom of screw is 30 in.; the screws are of equilateral triangular section 1.44 in. side, the vertex being machined to a cylindrical surface and 0.19 in. wide. The sinkage in soft snow is stated as 8 in., giving an average pressure of about 2 lb. per sq. in. The makers state that with this sinkage resistance of the snow to traction is sufficient to stall the motor, and that the same result is obtainable on ice. The tractor is also stated to be able to run on a glazed transversely inclined surface. The maximum tractive effort is given as 4000 lb. on loose powdered snow and 3500 lb. on ice; that is, 73 and 63 per cent respectively of the weight. With a total load of 7 tons of concentrates a 14-mile run in Idaho is stated to have been made at an average speed of 7 m.p.h., and a maximum speed of 23 m.p.h. has been made on ice. The snow motor is now being manufactured in America for winter work in mining and lumber districts.

The tractors previously described are specially designed for rough country or for snow. The next vehicle to be considered is capable of running over rough ground, marsh sand and snow.

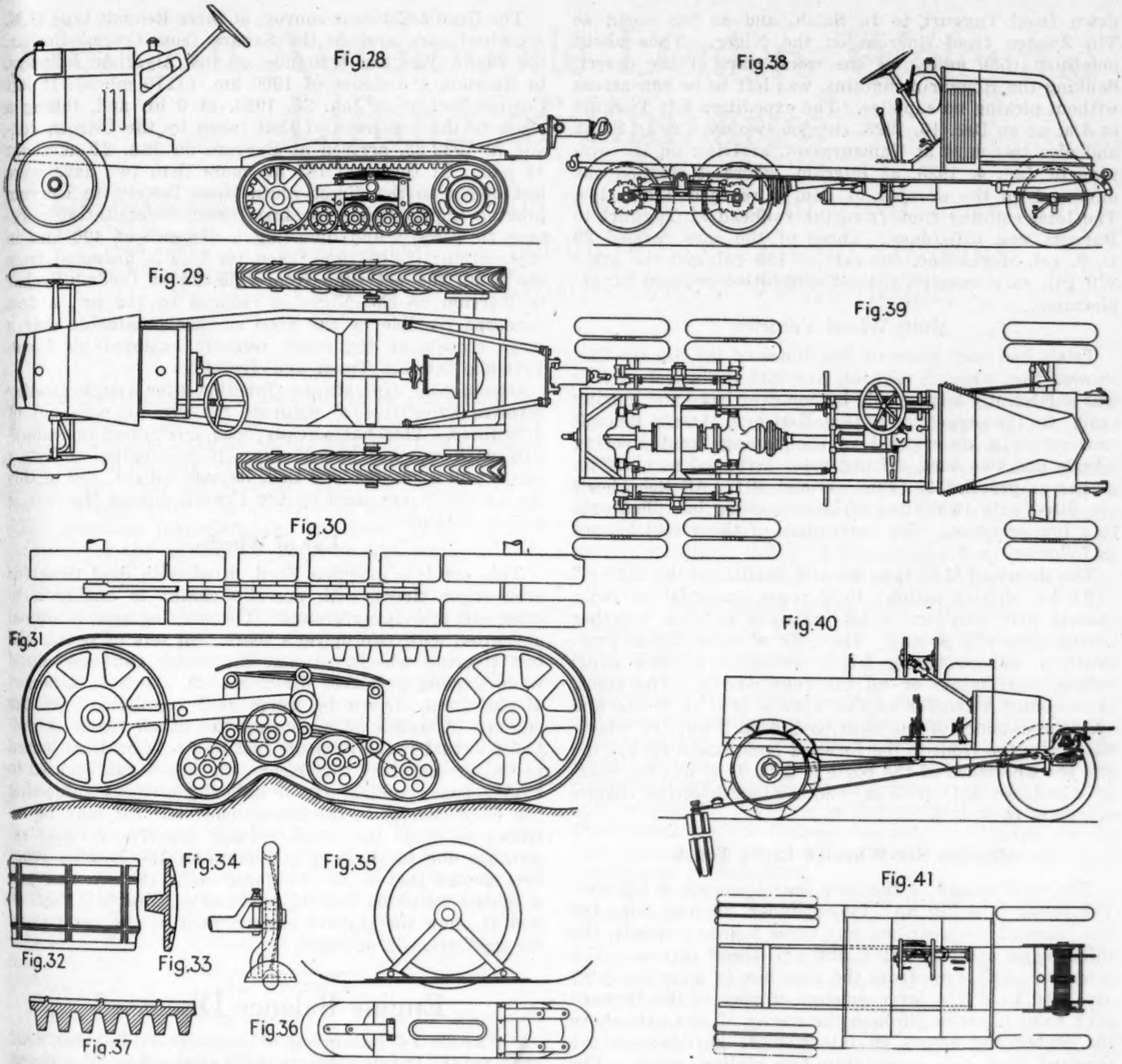
Kegresse Light Track Layer

The Kegresse car (Figs. 28-37) is fitted with a flexible belt track in some respects similar to the artificial chain tracks of the American tractors, but differing from these in all details. Taking the Citroen chassis, the back axle is detached from its springs, which are removed. A second axle is arranged in front of the driving axle and is fixed to the chassis. The track frame is carried in bearings on this axle and is capable of tilting through angles of 35 deg. up and 30 deg. down respectively. To the back axle on each hub a pair of pressed steel wheels are secured, of which the cylindrical outer surfaces carry the belt and the inner surfaces are made slightly conical and adjustable, so that they grip the internal pyramidal projections of the belt track. The front of the track frame is fitted with an extension gear for taking up slack in the belt track, and carries a pair of idle wheels (similar to the driving wheels) which guide the belt. Four pairs of small wheels, 8 to 10 in. in diameter, bear on the belt on each side of the internal projections and carry the weight through an arrangement of double compensating levers and springs. Straps are fitted to limit the travel of the rear (driving) axle in a downward direction to 35 deg. upward inclination of the track frame.

The belt track, which is an essential feature, is constructed of rubber-covered fabric of similar construction to the ordinary pneumatic cover and is from 6 to 8½ in. wide. The outside is provided with ribs projecting from ½ to ¾ in., arranged in ladder form, or in chevrons up to 1 in. deep, according to the surface to be run across or the general work to be done. On meeting a stone or other obstacle the idler wheels ride over it and the belt adapts itself to the conditions, a successive transference of part of the load taking place as the small carrying wheels pass over the obstacle; but, owing to the action of the compensating levers, no single pair of wheels carries much more than its due proportion of the load. The larger diameter of the front and back track wheels, 18 to 24 in., enables these to ride easily over larger obstacles. The insistent load on the tracks varies from 3.5 lb. per sq. in. light to 6 lb. per sq. in. loaded. This enables the vehicle to cross a snow field on which a man would require to use snow-shoes to avoid sinking. Figs. 32, 33 and 37 show details of the track used for snow. When the car is on greasy clay or other material giving small adhesion, the differential can be locked.

Under ordinary working conditions the car is capable of climbing a gradient of 25 per cent measured as the sine, but as it may be required to climb 70 per cent (45 deg.) it has been necessary to fit a supplementary gear change and to strengthen the gear and back axle.

†Popular Mechanics, Chicago, May, 1919, page 702. In this article it is stated that the load of the dog sleigh is 650 lb., and the distance traveled 25 miles per day.



Figs. 28 and 29—Side elevation and plan of Kegresse combination wheeled and creeper tractor
Figs. 30 and 31—Assembly of flexible track, driving and supporting wheels
Figs. 32, 33 and 37—Details of track used for snow
Figs. 34, 35 and 36—Steering wheel with sledge for use on soft snow
Figs. 38 and 39—Elevation and plan of Renault six-wheeled chassis for use in sandy deserts
Figs. 40 and 41—Converted Ford with triple rear tires and with a winch for rescuing mired cars, etc.

Steering is effected by the ordinary front wheels when running on roads, sand or moderately hard surfaces. For loose snow a sledge carried by arms pivoting on the stub axle is fitted, having a slot in the center through which the tire projects to a depth of about 2 in., which provides sufficient lateral resistance for steering shown in Figs. 34, 35 and 36.

At present there are two types of chassis fitted with the Kegresse tracks. The smaller is the small Citroen capable of developing 17 hp. and carrying a load of 1500 lb.; and the larger is a Mors having an engine capable of developing 42 hp. and carrying a load of 30 cwt. These cars when loaded carry nearly 80 per cent of the weight on the tracks, and this figure may rise to 95 per cent when running on low gear. The life of the belt track has not yet been determined because of the great variety of conditions, but the achievement of crossing the Sahara, 1550 miles, was effected by the vehicles on one set of tracks; and it is reported that they appeared to be good for making the return journey, though actually to avoid any risk a fresh set was fitted. On the road a speed of 35 m.p.h. can be attained. The car travels practically as smoothly as if on pneumatic tires, and the life is stated to be as good as that of the ordinary tire cover.

The crossing of the Sahara by automobile was first attempted in 1916 and attempts were repeated on many occasions, but the loose sand proved too great an obstacle. The first successful crossing was accomplished by the Haardt-Audouin Dubreuil expedition, a convoy of five Citroen-Kegresse cars, from Tuggurt to Timbuctoo, following approximately the caravan route. This "raid" was carried out with great care, supplies being carried

down from Tuggurt to In Salah, and as far north as Tin Zwaten from Burrum on the Niger. Thus about one-third (550 miles) of the worst part of the desert, flanking the Hoggar mountains, was left to be run across without picking up supplies. The expedition left Tuggurt at 5 a. m. on Dec. 16, 1922, stopped two days at In Salah and also two days at Tamanrasset, arriving on the evening of Jan. 4, 1923, at Burrum, where it stopped one day, and on the evening of Jan. 6 reached Timbuctoo. The total running time from the railhead at Tuggurt to Burrum was 15½ days. Three of the cars carried 29 U. S. gal. of gasoline, one carried 135 gal. and the other 270 gal, as a reserve against difficulties or need of exploration.

Multi-Wheel Vehicles

Trials had been made on the dunes of the Sahara that showed that wheeled vehicles, provided the wheel surface was suffiiciently large, could be run over loose and moving sand. On the suggestion of Gen. Estienne, Messrs. Renault constructed a six-wheeled vehicle having front steering wheels and two back driving axles arranged as close together as practicable (Figs. 38 and 39). All the wheels are fitted with twin tires of large section, but filled only to a low pressure. The particulars of these vehicles are as follows:

The six-wheel M.H. type Renault consists of the "10 hp." (13.9 hp. British rating) light truck (nominal 15 cwt.) chassis with two rear axles arranged as close together as the tires will permit. The pair of axles forms practically a non-swivelling bogie, arranged to give equal weight distribution on all the four wheels. The track, from center to center of the wheels, is 5 ft. 3 in., and over the outsides of the twin tires 6 ft. 3 in.; the wheelbase from the front to the forward back axle 8 ft. 5½ in., and the wheelbase of the bogie is 2 ft. 11½ in.; the overall wheelbase is 11 ft. 5 in., and the length of the chassis overall is 14 ft. 2 in.

Renault Six-Wheeled Light Truck

The total weight of the bare chassis empty is 1.2 tons. The motor is a "10 hp." four-cylinder, 75 mm. bore 120 mm. stroke; the gear-box has three forward speeds, the third being a direct drive, and one speed reverse. The propeller shaft runs from the gear-box to a cardan joint arranged to give a large amount of play to the forward back axle; it passes through the casing of this axle above the center and enters an intermediate gear-box on the forward back axle containing two sliding gears. The second shaft connecting the axles drives through cardan joints, the casing forming a jointed coupling between the two axles. Helical bevel wheels are used for axle drives. The driving axles are connected to each other by couplings with cardan joints and also to the back springs, which are pivoted at their centers on the frame and act as compensating levers between the two axles. The springs are attached at the forward ends direct by pinjoints to the forward driving axle and at the rear ends by shackles to the rear driving axle. The tractive effort of the forward axle is transmitted to the frame through the springs, and that of the rear axle through the couplings to the forward axles and thence through the springs to the frame. The driving wheels are all fitted with internal-shoe brakes operated by wire-rope compensating gear. The tires throughout are 775 mm. by 145 mm., of the balloon type.

Trials have shown that these cars can run practically anywhere in the Sahara on reasonable gradients, whether on shifting sand or on rough and rocky ground. These cars have recently crossed the Sahara by a different and easier route than that taken by the Citroen cars.

The Gradis-Estienne convoy, of three Renault type H.M. six-wheel cars, crossed the Sahara from Colomb-Bechar, the South Western terminus of the Algerian railways, to Burrum, a distance of 1900 km. (1170 miles). It left Colomb-Bechar on Jan. 25, 1924, at 0 hr. and, taking a route to the westward of that taken by the Citroen convoy in 1922-23, arrived at Burrum on Jan. 31 at about 11 p.m. Of the total 167 hr. more than two days were lost owing to the direct route from Teccelit to Burrum proving impracticable for fast travel, necessitating a return to Teccelit and involving a distance of 400 km. in exploration; if the time taken for this is deducted from the total, the net time from railhead at Colomb-Bechar to Burrum on the Niger is reduced to 113 hr., a feat rendered possible by the good surface obtainable over a large section of the route recently explored by Lieut. Estienne between Touat and Teccelit.

Overcoming difficulties.—Traction over rough country involves knowledge of methods for getting cars out of difficulties. This has already been mentioned in connection with winches and blocks. It is possible to use a car to pull a greater load than its own weight, and of this the Le Grain car used by the French during the war is a good example.

Use of Winch

This car is a modified Ford, fitted with dual tires (or even triple tires) with non-slip chains to enable it to cross soft and clayey ground. The steering gear is altered and fitted with two driver's seats, two sets of pedals and two steering wheels, so that the driver can look ahead when driving in either direction. A winch is arranged at the front, driven by worm gear engagable with the engine. A means of anchoring the winch frame is provided so that it can be made fast to a balk-holdfast buried in the ground. By this means the winch can be used to haul a heavy vehicle out of difficulty without subjecting the Ford chassis to the heavy load; all that may be required of it is the small normal (nearly vertical) resistance due to want of alignment of the hauling rope; this means that a car weighing only 18 cwt. can pull a vehicle weighing several tons out of trouble. Figs. 40 and 41 show the general arrangement of the vehicle and its application in practice.

Engine Balance Discussed

A PAPER on Balancing of Automobile Engines, read before the Institution of Automobiles at a recent meeting by H. S. Rowell, put forward the argument that all material systems have a center of gravity and principal axes and the aim in balancing is to keep these stationary or to add masses so that the new system has a stationary center of gravity and a principal axis in the axis of rotation.

In engines of the Vee type the phenomena all can be expressed in a series of elliptic harmonic motions and all elliptic harmonic motions can be reduced to circular motions. Thus the Vee engine of any angle can be closely balanced, at least in theory.

The interesting fact was brought out that in Vee engines the primary harmonic of the unbalanced force is circular if the angle of Vee is 90 deg., the secondary if the angle is 60 deg., the tertiary if the angle is 45 deg., and the quarternary if the angle is 36 deg.

ALBERT A. LYMAN is no longer connected with the Velie Motors Corp. The statement, appended to his Forum letter published in AUTOMOTIVE INDUSTRIES of Feb. 14, that he is chief engineer of that organization was incorrect.

German Automobile Dealers Welcome Lifting of Embargo

Believe raising of restrictions would result in great impetus to sales. Director of retailers' association coming to this country. Manufacturers' views differ.

INDICATIONS are that the embargo on automobile imports which has been in force in Germany for nearly ten years will be lifted before long and that a market for a limited number of cars, chiefly in the lower price classes, will then be open in that country. Progress toward settlement of reparations is an added factor which make American manufacturers interested in the present condition of the automobile industry and trade in Germany.

Conditions affecting trade in automobiles with Germany have been peculiar during the past several years. While an embargo has been in force, it has not been absolute. Import permits could be granted, and were granted in certain cases, by the Office for Foreign Trade in Automobiles and, besides, there were two general exceptions to the embargo. Reciprocity agreements had been entered into with Austria and Italy, according to which limited numbers of vehicles could be imported from these countries, in return for the admission of equal numbers of automobiles of German manufacture into Austria and Italy. In accordance with the Treaty of Versailles, automobiles have to be admitted free of duty from Alsace-Lorraine, and certain quantity limitations were agreed upon in this connection by the French and German Governments. This clause of the Peace Treaty is of advantage to the firms of Mathis and Bugatti, both of which are located in Alsace.

1923 Imports

During the first eleven months of 1923 (the December returns not being in yet) Germany imported 466 passenger cars from Austria, 188 from Italy and 312 from other countries. In addition there were imported 329 motor trucks and 220 motorcycles. These figures, however, do not apply to the whole of the territory of the German Federation. This is due to the fact that in the occupied territories, including the Ruhr district, the authority of the German Government is suspended and the control of commerce is in the hands of the Rhineland Commission and, apparently, of the chiefs of the Army of Occupation. The announcement that Johannes Buschman, director, German Automobile Dealers' Association, is sailing for the United States on April 24 gives a special significance to the annual report which he issued recently for his organization. The report throws some interesting sidelights on the existing situation. To quote from the report:

"Conditions in the occupied territory were always somewhat peculiar, owing to the fact that the sovereignty of the Federal Government was suspended to a certain degree by the authorities of occupation, and the embargo, therefore, never was enforced strictly along the western border. However, imports of foreign cars which might have affected business in German products were quite limited. The situation changed entirely upon the invasion of the Ruhr by the French and Belgians and the inauguration of passive resistance on the part of the Germans.

"The complete closing of the occupied territories toward the East, effected by the authorities of occupation as a means of retribution, was accompanied by a complete opening of the western boundary. The result was an unrestricted inrush chiefly of French and Belgian, but also of American and British, cars into the occupied districts.

Sales Made in Occupied Territory

"Whereas, at the beginning, imports of German cars were rendered absolutely impossible by the hermetic closure of the eastern border, it made little difference when commercial relations across the occupation boundary were made possible again, so far as trading in German makes of cars was concerned. The French particularly promoted with all of the means which political control placed at their disposal the creation of markets for their own automobile industry in the occupied provinces. In this connection the Commercial Section attached to the Command of the Army of the Rhine acted directly as a propaganda organization.

"This section invited a large number of automobile dealers and suggested to them the trading in French products. The whole of the motor traffic in the occupied territory was placed under the control of the authorities of occupation, every vehicle in service being required to have a special permit (in addition to the German registration certificate). For a long time this special permit was refused for vehicles which had entered the occupied territory from unoccupied Germany after Jan. 11, 1923 (the date of the Ruhr invasion).

"Later, when this extreme measure was rescinded, great difficulties were still placed in the way of obtaining the permit, whereas permits for the operation of French cars were issued promptly and most willingly. In addition, all imports from unoccupied Germany were subjected to an appreciable duty."

Price Levels Change Rapidly

Owing largely to variations in the exchange situation in Germany during the past year—the artificial bolstering up of the paper mark by the Government during the first months of the year corresponding to the period of passive resistance in the Ruhr, the violent decline of the mark during the following months, and finally, toward the end of the year, the introduction of the rentenmark, a form of currency that has remained stable so far—there were great changes in price levels in that country.

An automobile chassis price index on a gold basis was determined each month by the Association of Automobile Dealers and the results are most interesting. The index

is based on the prices of ten chassis ranging from 5 to 20 (tax) horsepower. First the prices for these chassis in July, 1914, were determined and this was made equal to 100 per cent. For 1923 the average prices of the same chassis each month were then determined from Association "guide prices" and the price index calculated therefrom. The prices figured with apply to the chassis without tires and without lighting and starting equipment.

It is thus shown that passenger car prices in Germany increased from 42 per cent of 1914 prices in January, 1923, to 119 per cent in December, 1923, and dropped to 114 per cent in January, 1924. The increase was fairly steady throughout the year, except that there was a slight backward movement during the summer months.

Truck Prices Increase

Motor truck prices increased even more phenomenally than passenger car prices, from 39 per cent of 1914 prices in January, 1923, to 148 per cent in December of the same year, but the reaction in January also was stronger, the price index that month falling from 138 to 114 per cent. Pneumatic tire prices rose from 39 per cent to 95 per cent and then came down to 69 per cent in January, 1924. Solid tire prices rose from 16 to 42 per cent and then dropped to 31 per cent in January last.

Gasoline, which is imported chiefly from the United States, stood at practically the same figure at the end of the year as at the beginning, whereas the native fuel, benzol, rose in price from 113 per cent in January to 166 per cent in December.

Referring to the rapid advance in automobile prices during the latter months of the year, the German Automobile Dealers' Association says it coincided with the period of rapid depreciation of the currency. Although automobile sales already during this period were generally made on a gold basis and all risks connected with currency depreciation were passed on by the industry to the trade, it is obvious that the gold prices asked included appreciable premiums for currency depreciation risks. It is the general view of the trade that the industry, after it began doing business on a gold basis, was rather slow in dispensing with these premiums.

Speculative Buying Common

As regards the classes of the population that buy automobiles, the report of the Dealers' Association states that the new rich, which even in 1922 played an important part, are passing into the background again. Still it is true that the months of feverish speculation brought the automobile trade a number of customers who owned their car solely to easily made speculative gains, and the young bank clerk motorist is not merely a character of the comic press.

The demand came chiefly from industrial and trading classes, and from the owners of large country estates. Information from different sources was to the effect that owners of country estates practically ceased to figure as purchasers during the latter part of the year and that negotiations already started often were discontinued, a sign that the economic reorganization of the country hit the agricultural population hard. The money scarcity which set in during the second half of the year also dampened the buying ardor of prospects in other occupations.

The trend toward the light car is becoming more pronounced all the time, and this tendency has brought numerous new manufacturing concerns into the field. In the race for small cars held in connection with the Berlin show, a large number of makes which had been little known up to that time lined up at the start. The boom which the automobile business experienced during the last few years probably encouraged these new firms to take up the manufacture of light cars, but to judge from information gathered among dealers it would appear that many of these firms greatly underestimated the difficulty of not only designing but also manufacturing an automobile. By the end of 1924 it will be plainer which of these new firms have a definite future and will be a permanent acquisition to the automobile industry.

It appears that the lifting of the embargo on automobiles is only a matter of time, as it represents a step which Germany must take if she wants to reestablish commercial relations with her former enemies. That the German Government is working toward this end is shown by the fact that already it has concluded commercial treaties with Italy (in 1922), with Russia (at Rapallo in 1923) and with the United States, this latter treaty drawn up in December, 1923, awaiting ratification.

The German Automobile Dealers' Association favors an early lifting of the embargo though it has not specifically petitioned the Government to this effect. Great interest has been shown in Germany in recent months in the prices of foreign automobiles, and in this connection prices of cars exhibited at the Paris and London shows and prices quoted in the occupied territory on French and other cars have been published.

Lifting of Embargo Favored

It is realized that when the country is opened to foreign cars the rather large difference between these prices and those now asked in Germany for similar cars will have to be wiped out. Of course, an import duty will be imposed and it is felt that this, together with price reductions which undoubtedly will be made by the German automobile industry, will enable German makers of high grade cars readily to hold their own. The situation is somewhat different in the low priced field, in which it is questionable whether the German industry can compete successfully.

However, should foreign low priced cars be imported to any great extent (the dealers' association argues) it could hardly be said that they had robbed the German industry of its purchasers. On the contrary, they would be opening up new markets among people who at present German prices could not think of owning an automobile and the number of whom probably would be so large that the German industry with its limited capacity could not well fill the want. The final result would be an enormous increase in automobile traffic, and such an expansion could not fail to benefit the German automobile industry in the end.

That it is possible to sell foreign automobiles in Germany if the embargo is removed is clearly shown by the figures of imports from Austria and Italy during 1923. During that year automobile sales were largely influenced by exchange conditions, and although the rapid decline of the paper mark on the whole was very unfavorable to the importation of foreign goods, the imports from these two countries reached the limits permitted by the agreements.

Export Supervision Removed

As a preliminary to the lifting of the embargo, the German automobile industry in September, 1923, was freed of the supervision over exports of the Office for Foreign Trade in Automobiles. Previous to that time a special permit had to be obtained for the exportation of each shipment of automobiles and a payment proportional to the value of the goods for which the permit was sought had to be made to the "Office" to make up for the low exchange value of the German mark. It was in September that the prices of German passenger cars first attained

the level of July, 1914, and this removed the danger of cars being sold abroad at ruinous prices.

In this connection the returns of German automobile exports during 1923 are of interest. Only the figures for the first eleven months are available, but these suffice to give an idea of the volume of exports and of the general trend of the business during the year. During the first eleven months of 1923 there were exported from Germany 4171 passenger cars, 1327 commercial vehicles, and 7885 motorcycles. The exports were comparatively small because during the greater part of the year the demand in Germany itself was good, prices rose almost continuously throughout the year and exceeded world prices during the latter half, and certain markets are practically closed to German automobiles, as, for instance, the French market, by a 180 per cent duty.

Reichsbank Unfavorable to Automobile Paper

One difficulty the German automobile trade had to contend with toward the end of the year was the fact that the Reichsbank, after the introduction of the rentenmark in November, refused almost without exception to discount notes presented by automobile dealers. The reason given for this change in policy was that automobiles were articles of luxury and the bank did not feel justified in lending its credit to this commerce.

As regards the relation between the industry and the trade, the report of the dealers' association says, substantially, that the trade is in a relatively much stronger position now than before the war, as a considerable number of large, well-financed firms have grown up in it. It is doubtful whether the German industry could have carried through its production program the way it did had it not been for the deposits of the dealers. Thus the credit of the trade has been a help to the industry, whereas previous to the war the industry had to give credit to the trade.

Manufacturers Disagree with Dealers

That the German automobile manufacturers do not see "eye to eye" with the dealers in respect to the embargo question can be imagined. In a statement issued by their association the suggestion that the imports of foreign automobiles in considerable numbers would be of educational value to the German industry, in that it would acquaint them with the progress made abroad in automobile design since the war, is ridiculed. It is said that German firms as soon as it was possible sent their engineers abroad to see what had been accomplished in the way of improved design, and if foreign firms really had a lead on the Germans after the war they were long since caught up with, as shown by the racing successes of German cars in international events to which they were admitted in the last few years.

This report also admits that in the end the embargo must come, but it is hoped that it will not come till the end of the current year. It is stated that the German industry began to pare down its prices as soon as the introduction of stabilized currency made this possible.

The works are said to be in the midst of a process of reorganization whereby, by reduction in the number of models, simplification in manufacturing processes and increase in the scale of production, they hope to reduce their manufacturing costs. Such a process, they say, requires time, and they ask that they be given the necessary breathing spell so that they may prepare themselves properly for competition in the world's markets.

Ford Research Laboratories Being Enlarged

IN the building of the Ford Motor Co. at Dearborn, Mich., in which the Fordson tractor was originally manufactured there are now located the research, experimental and engineering departments for practically all of the Ford industries, as well as the publication office and printing plant of the "Dearborn Independent." This building has long been inadequate for the purpose and, accordingly, work was begun practically a year ago on a new building alongside the old one, which will take the place of the latter within a few months. The new building is not only much larger than the old one but is much better suited to the work.

With the exception of a central office section, the whole building will be of the single story type, with a length of 800 and a depth of 200 ft. The office section, at the middle of the front of the building, is two stories high and measures 234 ft. in length by 50 ft. in depth.

The building is of Kahn design and is a steel, concrete and glass structure. There are no partitions, and it is planned to keep all articles of equipment, such as filing cabinets, below a height of 4 ft. above the floor, so there will be a free view through the whole immense space and daylight illumination will be ideal. A basement extends under the whole building, in which will be installed all of the piping and electric wiring. All machinery will be electrically driven and there will be no belting in the building.

A number of decorative panels representing various methods of modern transportation and motor cultivation surmount the main entrance. The inside walls are wainscoted with yellow brick to a height of approximately 8 ft., above which height everything is white enameled. Columns divide the interior into bays measuring 40 by 50 ft. approximately. A novel heating and ventilating system is being installed. All air will be washed. Heated air will pass up through some of the columns, which are made hollow for the purpose, entering the room about 8 ft. above the floor.

The new building will contain the chassis and body drafting departments, a tinsmith and metal workers' shop, where experimental parts in sheet metal can be made; an experimental pattern shop, an experimental machine shop, a dynamometer laboratory and a chemical laboratory. At the center of the building, running lengthwise, there is a crane way and electric cranes will be installed for handling heavy machines, etc.

IN the Seventh Progress Report of the Gage Steel Committee, Bureau of Standards, recently issued, it is stated that for full hardening of 1 in. diameter cylinders of gage steel containing 1 per cent carbon and 1.4 per cent chromium, a quenching medium intermediate in speed between oil and water is required, and that a suitable medium has been found in a glycerine solution in water.

Solutions of different degrees of concentration were experimented with. The relations of cooling power and diameter to cooling rate and radial temperature gradients in cylinders are given for ideal conditions. Some effects of the previous treatment of chrome steel on its hardening changes are noted and the length changes on tempering after special treatment are considered.

Chassis Lubrication Is Simplified by Bowen System

Is designed to deliver accurately measured quantities of oil to each bearing slowly for several hours after pump plunger is depressed. Air domes over each header valve serve important purpose in metering and controlling flow. Special tubing used.

A CENTRALIZED lubricating system designed to supply oil under pressure to all bearings of a chassis outside the engine recently has been developed by the Bowen Products Corp. of Auburn, N. Y. This system comprises a combined reservoir and pump, the latter intended for foot operation, and the necessary headers and piping for connecting the pump discharge to the bearings to be lubricated.

Its novel features include what may be termed pneumatic accumulators intended to feed the oil slowly under moderate and decreasing pressure for some hours after the pump plunger is depressed, certain special valves and fittings and a new form of flexible tubing for connecting parts of the system on the axles with the reservoir on the chassis frame.

Fig. 1 shows the combined reservoir and pump. The former holds about one quart of oil. The plunger, with a foot button at its upper end, is held in its upper position by a spring. When in this position oil passes its lower end and enters the cylinder, at the bottom of which is a combined screen and drain plug. Oil forced through the screen by depressing the plunger enters a vertical passage beside the cylinder and flows thence into 5/16-in. tubes to the main headers shown in Fig. 2.

Each header is a brass forging provided with a lug for attachment to the frame of the chassis. It is made with as many outlets as desired and each outlet is fitted with a hardened double-ended steel valve. This valve is normally held closed against the supply passage. Above each valve is an air chamber formed in a solid piece of metal which is threaded into the header casting and sealed with a gasket.

Arrangement and Operation of Header Parts

The outlet tubing connection is attached in similar fashion but is located in the axis of the valve. In manufacture this connecting piece is first screwed home without its gasket. This forces the valve into the softer metal at each end and forms two seats mating respectively with the two 30-deg. ends of the valve. The outlet connection then is removed and replaced with a 1/32-in. gasket in position. This procedure is followed with each valve so that each is given an end motion of the same amount.

When the plunger of the assembled system is depressed the pressure created opens the valves against their springs and closes the outlets while oil is forced into the chambers above each valve and compresses the air trapped in the chambers. When the plunger is released, the valves, under the influence of their springs and the air pressure on the oil, close against the supply seats and the oil is fed out of the discharge passages under the pressure of the air remaining in the chambers.

The volume of oil discharged from the header to each delivery line is said to be approximately equal to the volumetric capacity of the respective air chamber, which, in turn, can be proportioned to the needs of the particular bearings served. The pressure at first is approximately equal to that created by the pump, so that a few drops of oil are delivered at this high pressure.

As the air expands and forces the oil out of the accumulator chamber the pressure gradually decreases, but in some cases the oil is fed slowly, it is claimed, for several hours, the time depending upon the resistance to flow in the discharge line. Under normal conditions the pressure at the end of the delivery tube is said to vary 1 to 10 lb. per sq. in., depending upon the quantity delivered.

System Has Self-Cleaning Feature

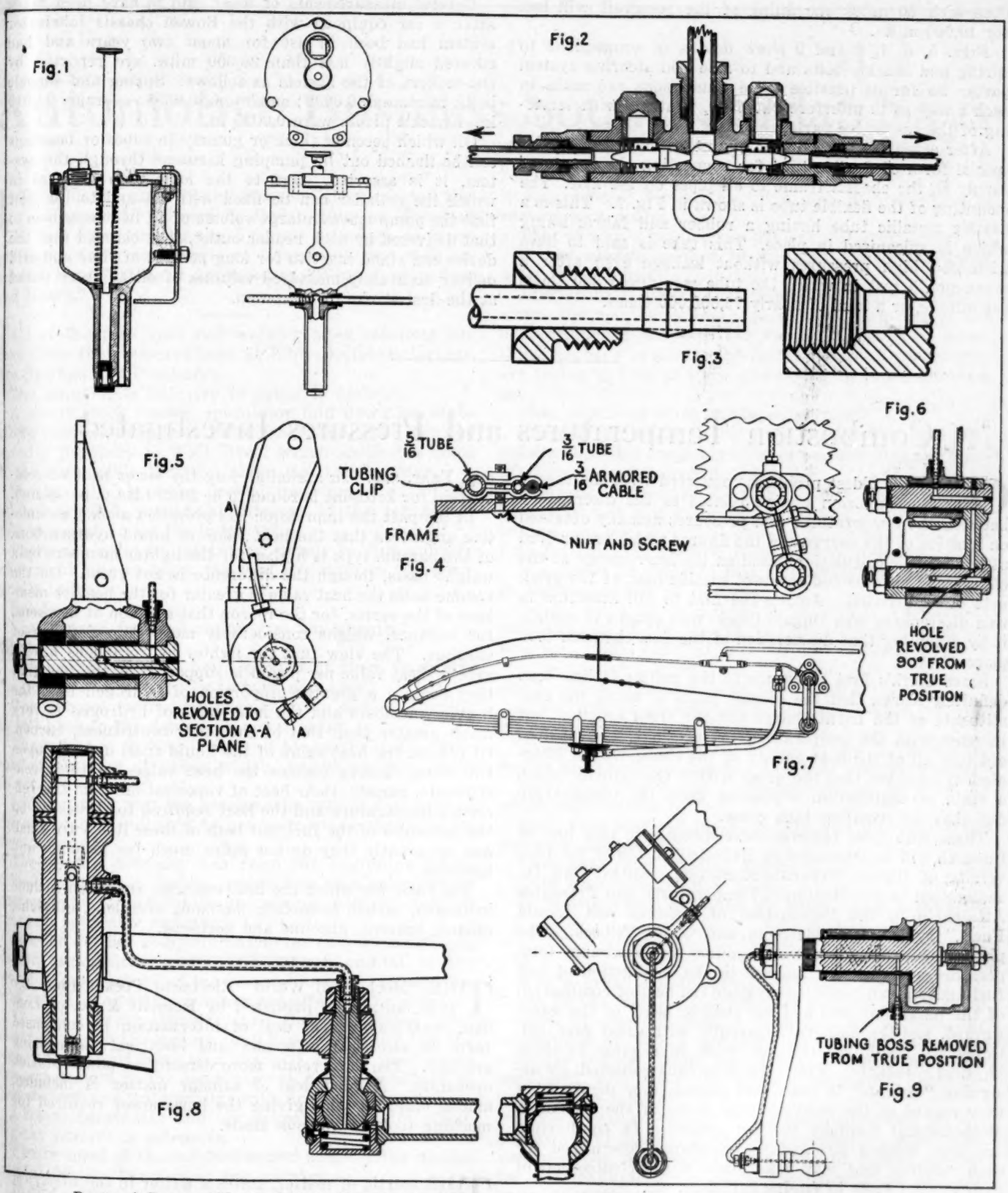
Valves of the construction shown will hold pressure for a long time without leakage. When any excessive resistance is offered by the outlet pipe the valve will not seat at its discharge end, and the direct pressure of the pump accordingly will be applied to the tube without, it is claimed, affecting the feed of other tubes.

Should dirt on the seat at the inlet end of the valves prevent the valve from seating, some or all of the oil delivered may return to the pump and thus prevent delivery from one line. It is pointed out, however, that the dirt is not likely to remain long on the seat because of the flow of oil in both directions over the seat under this condition. Foreign matter on the discharge end of the valve simply results in delivery of more oil from this opening than is intended.

Delivery lines can be split at T connections if desired. If tubes of equal length and bore are opposed in the T fitting, equal volumes of oil, it is claimed, are delivered by each. If the tubes are of unequal length, equal volume of discharge can be obtained by varying the bore of one tube. Tubes of 5/16 in. outside diameter and 0.05 in. wall are used for main lines. Branch lines are of 3/16 in. outside diameter and have wall thicknesses of 0.05 or 0.065 in.

Fig. 3 shows the form of connection employed. The threaded plug through which the tube passes provides a long bearing for the tube, while the large fillet on the hex end tends to prevent localization of stresses with consequent failure of the tube as a result of vibration. The type of clip employed for attaching the tube to the chassis frame is seen in Fig. 4. When the screw is tightened up the end projecting through the nut is cut off and riveted over to prevent loosening.

Header units are not, as a rule, placed adjacent to the pump but are so located in respect to the bearings to be served as to be central for the particular group. For example, a header with four outlets may be placed on some part of the frame near the rear axle and thus serve bearings in the shackles and pins at the ends of the rear springs. Another header will serve front spring and axle



Parts of Bowen Chassis Lubricating System: Fig. 1—Combined oil reservoir and pump. Fig. 2—Header unit showing air domes and double end valves. Fig. 3—Detail of tube connector. Fig. 4—Form of clip used for fastening piping to chassis frame. Fig. 5—Detail of spring bolt connection. Fig. 6—Detail of shackle showing one method of drilling oil ducts. Fig. 7—Mounting of flexible tube serving parts on front axle. Figs. 8 and 9—Connections on steering system parts

bearings, while a third will care for clutch and steering gear bearings. Each header is fed from a main pipe from the pump and distributes the oil through branch pipes to as many bearings near by as desired.

An installation on one 115-in. wheelbase chassis is said to require 44 ft. of tubing and three headers for the lubrication of 25 chassis bearings. About ¼ cu. in. of oil delivered at each stroke of the pump is said to be sufficient to lubricate all these bearings with the predetermined quantity of oil. On this basis, if the chassis is lubricated

once each 50 miles one filling of the reservoir will last for 10,000 miles.

Figs. 5, 6, 7, 8 and 9 show details of connections to spring and shackle bolts and to axle and steering system parts. So far as possible these connections are made in such a way as to interfere but little, if at all, with servicing of the respective parts.

After extensive tests Bowen engineers have developed a special form of flexible tube for connecting the source of supply on the chassis frame to oil pipes on the axle. The mounting of the flexible tube is shown in Fig. 7. This is a flexible metallic tube having a rubber and fabric lining which is vulcanized in place. This tube is said to have withstood high pressures without leakage even after a seven-month test in which the tube was flexed 360 times per minute, or a total of nearly 75,000,000 times.

Careful measurements of wear said to have been made after a car equipped with the Bowen chassis lubricator system had been in use for about two years and had covered slightly less than 25,000 miles are reported by the makers of the system as follows: Spring and shackle bolts, minimum, 0.0009; maximum, 0.0035; average, 0.0019 in. Knuckle pivots wore 0.0035 in.

Oil which becomes thick or gummy in tubes or bearings can be flushed out by pumping kerosene through the system, it is asserted. Due to the long time interval in which the cylinder can be filled with oil and to the fact that the pump moves a large volume of oil in comparison to that delivered by each header outlet, it is claimed that the device can stand inactive for long periods of time and still deliver accurately measured volumes of oil at every outlet at the first stroke of the pump.

Combustion Temperatures and Pressures Investigated

ONE of the oldest problems connected with the theory of the explosion engine relates to the discrepancy between the temperatures and pressures actually obtained on ignition of the charge and the figures which are arrived at by a simple calculation based on the heat energy of the charge and an assumed constant specific heat of the products of combustion. Among the first to call attention to this discrepancy was Dugald Clerk, who sought to explain it by assuming that dissociation of the fuel elements took place.

Since Clerk's first reference to the matter it has been definitely shown that the specific heats of all of the constituents of the burnt charge are far from constant but increase with the temperature. It also has been pointed out that all of the heat energy of the charge is not liberated at once but that the gases within the cylinder reach a state of equilibrium depending upon the temperature and that the reactions then cease.

Those who have followed developments in this line of research will be interested in Bulletin No. 139 of the University of Illinois Experiment Station, entitled "An Investigation of the Maximum Temperatures and Pressures Attainable in the Combustion of Gaseous and Liquid Fuels," by G. A. Goodenough and G. T. Felbeck. The physical constants which determine the maximum temperature and pressure reached in the combustion of any fuel under given conditions include the heat of combustion of the particular fuel and the specific heats of the gases formed, and the authors, apparently with great care, collected the results of research work in relation to these physical constants. From the data thus collected, by assigning "weights" to individual results, they derive what they regard as the most accurate value of the constants. Mathematical formulæ for the condition of equilibrium are then worked out and the constants determined for each reaction that may take place in the combustion of hydrocarbon fuels in engine cylinders, etc.

Some rather surprising results are arrived at with respect to the heats of combustion of gasoline and kerosene. In these cases the sources of information are given as "various handbooks," whereas in the case of hydrogen, methane, etc., values obtained by well-known physicists are cited. The handbooks are said to give the higher heat of combustion of liquid gasoline at from 19,000 to 21,000 B.t.u. per pound. This gives an average of 20,000 B.t.u., and from this the lower heat value is calculated as equal to 18,675 B.t.u. per pound of liquid gasoline taken as at 520 deg. Fahr. abs. In a similar way the lower heat of combustion for kerosene is found to be 20,220 B.t.u. per pound.

In the past the impression has prevailed among automotive engineers that the heat value of liquid hydrocarbons of the paraffin type is higher for the lighter members on a weight basis, though the difference is not great. On the volume basis the heat value is greater for the heavier members of the series, for the reason that a gallon of kerosene, for instance, weighs considerably more than a gallon of gasoline. The view that the lighter hydrocarbons have a greater heat value per pound is supported by the fact that they contain a greater proportion of hydrogen than the heavier members and the heat value of hydrogen is very much greater than that of the other constituent, carbon. Of course, the heat value of the liquid fuels depends upon two other factors besides the heat values of their constituents, namely, their heat of vaporization from the reference temperature and the heat required for breaking up the molecules of the fuel, but both of these items are small and apparently they do not differ much for gasoline and kerosene.

The fuels for which the heat energies are given include hydrogen, carbon monoxide, methane, acetylene, ethylene, ethane, benzene, gasoline and kerosene.

THE "Mechanical World" Electrical Pocket Book for 1924, an annual published by Emmott & Co. of London, contains a great deal of information in condensed form on electrical principles and electrical engineering practice. The data relate more directly to power station operation. A good deal of tabular matter is included, among others a table giving the horsepower required for machine tools of various kinds.

THE inertia of matter, states a writer in the *Electrical World*, is one of the most important factors entering into engineering calculations. However, the inertia of the human mind is probably even more influential in determining the course of engineering developments. All are familiar with the fact that a practice once established for sound technical reasons often remains in force long after these reasons have ceased to exist. The practice becomes a "policy," and the inertia of the mind resists any tendency to change, frequently causing great delay in the development of industry.

Automotive Business Sound, Jordan Says

UNDER the title "Thank Heaven—the Expected Has Happened," Edward S. Jordan gives an illuminating statement of the business situation as it exists today. His analysis is so interesting that it is reprinted here just as it appeared in "What Jordan Sees and Hears."

All of the pink spat and walking stick salesmen are cancelling their reservations at White Sulphur Springs, Hot Springs and Pinehurst.

The automobile industry is going to collapse.

A smart stock market speculator laid down his clubs at the nineteenth hole at Palm Beach the other day and wired a prophecy to Wall Street which spells the doom of the automobile industry about the 15th of May.

Having sold short, he needed the support of all the shallow minded, superficial thinkers of the country to help him cash in on his judgment.

There are a lot of intelligent people in this country who might like to know the real situation in the automobile industry.

Briefly it is this:

The demand for new motor cars has always been insatiable.

You cannot possibly build enough of them to satisfy the people who would like to have new cars.

The demand for the old ones that the public is trying to sell back to the dealers is not so good.

The public is finding it difficult to market their inventory of old cars at prices which they think they ought to get.

Isn't it funny that the gossips who talk so much about the automobile industry do not understand these fundamental facts?

The Jordan company has from the beginning maintained a policy in design, production and sales which contemplates a gradually increasing demand for its product, both new and used.

But the Jordan company has never conceived that its dealer organization could find enough capital in the world to buy back all of the second-hand cars that people who would like to own Jordans are offering for sale.

This is a great industry, and the remarkable thing about it is not the money that has been made but the money that could have been made if all the maufacturers and dealers in the country were not so ambitious to just deliver new automobiles with or without a profit.

I travel constantly and my acquaintance with sleeping-car porters is extensive.

I know most of the successful and some of the unsuccessful dealers throughout the country.

In the automobile industry we have simply been supplying a demand for individual transportation which has been accumulating for two thousand years.

But with the rapid changes that have been made in designs and the natural inclination on the part of all owners to have the newest and latest thing, a situation has been created in the second-hand market which makes it very difficult for any except a good business man to survive as a dealer.

That is why a great many dealers fail every year.

It has always seemed to me that Providence looks after the automobile industry.

Just about the time that production reaches a point where the merchandising capacity and resources of the dealers cannot possibly take care of the output, something happens to arouse the latent senses of people who are trying to over-produce and trying to force the market.

That is exactly what is happening now.

Business is going to be good throughout 1924 and automobile sales are going to be large providing the manufacturers do not over-produce.

Business is going to be good largely because everybody is afraid it is going to be bad and no one is overbuying—no one is over-stocking—and from this day on I do not think anybody is going to over-produce.

We should be thankful that this awakening took place in March instead of in July.

Trades and time sales must be handled in a legitimate business way by the dealers, and the normal demand for new motor cars satisfied in a business-like way.

It looks like a great year if no one gets excited—no one over-produces and everybody keeps his head.

There will be no collapse in the automobile industry in May.

There will be no saturation point in the automobile industry until everyone has one and none ever wears out—

Until they stop using telephones and go back to the messengers boys—

Until they tear out the bath tubs and go back to the old wash tubs—

Until they stop building roads—

Until they stop growing boys—

Until progress is dead and the world turns backwards.

EDWARD S. JORDAN.

P. S.

It is a great satisfaction to one who thoroughly believes in the stability, permanency and continued rapid growth of the automobile industry, to witness the application of sound judgment as expressed in constructive policies being introduced by those able business men who head the leading producing organizations in the industry.

Since a real knowledge of merchandising and the organization of dealers properly educated to good business methods will be the foundation of future success for the manufacturers, it is encouraging to see and know what these manufacturers are doing to make their business permanent through cooperating intelligently with their distributors and associate dealers.

It is evident that the threatened over-production will not come because these men realize that the productive capacity of the industry as a whole is greater than the capacity of the dealers to finance trades and times sales.

Rapid Railcar Development Predicted at Midwest S. A. E. Meeting

Railroad and motor truck men exchange views about this new transportation medium. Reliability and dependability are prime requisites in vehicle design.

By J. Edward Schipper

WE are on the threshold of big developments in the rail car field, according to the views of prominent railroad men who have been making a close study of this field of transportation. Papers presented by men in both the rail and automotive fields at a meeting of the Midwest Section of the Society of Automotive Engineers held in Chicago on April 12, show a development and an interest in this field which indicates a fertile source of business for certain branches of the automotive industry and the solution of some puzzling problems in the railroad field.

It was brought out clearly that the rail car cannot be considered as simply a motor truck with wheels adapted to rails. Much of the practice of the truck engineer is useless if applied to the rail car field. The problems of the two fields have their similarities, but they also have important and far-reaching differences. Reliability and dependability are important in the truck field, but they are the very groundwork upon which the use of the rail car must be built. Stops for engine trouble which may be scarce when considered from the truckman's viewpoint are disastrous from the standpoint of the railroad man.

Papers by Col. Milton McGrew, Railcar Dept., Mack Truck Co.; E. J. Brennan, Supt. Motor Power of the Chicago & Great Western; L. G. Plant and E. Wanamaker, engineers of the Rock Island R. R., presented before the S. A. E. Midwest Section last night constituted a mine of information of a practical nature for those making a study of this phase of the automotive industry. These papers are digested herewith:

Production Basis Desirable

Col. McGrew talked on the methods which must be followed in order to make the rail car part of the industry practical from a production and economy standpoint. He pointed out the necessity for using production units to as large an extent as possible. He said in part:

"The railroad has always been further developed in America than anywhere else in the world and this has in a large measure been responsible for the growth of the country. It has been the big and spectacular things up to now which have claimed our attention. The Twentieth Century Limited and trains of that type have been in the public eye. The small end of the business has been neglected, but now the bus lines and the motor car lines are actually taking business away from the railroads.

"The railroad man is beginning to wake up to the fact that antiquated equipment will not do for light traffic and short runs. The oil-lighted coach of 1870 cannot be employed. The gasoline rail car, however, meets this situation nicely. Early mistakes caused suspicion of the rail car, but the experimental stage has now passed. We now have satisfactory cars carrying from sixty down to twenty- five passengers. Many of these can handle trailers or even short trains in level country at up to 50 m.p.h.

"The rail cars are now dependable and can be made to operate at from 20 to 50 cents per car-mile, which is less than the cost with steam. Under certain circumstances storage battery cars are satisfactory, but they are heavy and the expense of the battery upkeep makes them impractical in most instances. Gasoline-electrics are again being tried, but the heavy weight and the inefficiency of converting the power from mechanical to electrical and then back to mechanical energy stands in the way.

Gasoline-Electric Experience

"In Europe the gasoline-electric is used in connection with a Diesel engine. These engines are constant-speed types with electric transmission. They are costly and difficult to operate. The hydraulic drive is also too complicated and is costly, besides giving trouble when leaky.

"Two types of rail car can be successfully built—first, the type with high-power engine and, second, the lighter type with lower power engine. Mechanical transmissions should be used in both cases. High-powered cars are required, but if they are equipped with the large high-power engines it is impossible to make them quantity production units and there is not much chance for complete interchangeability.

"The answer to the problem of the high-powered rail car is two powerplants synchronized. The motor truck engine is dependable and fills the bill for multi-unit control. The cost is low, the parts are all interchangeable and the economies of quantity production are available. Repair parts also can be secured at all populated centers. By using more than one prime mover to a car there is greater insurance against breakdown. The problem of synchronizing the engines presents no great difficulty. Tests have been made which show the difference in the engine loads to be negligible.

"Railcars of this description are good for the non-paying branch line, in-between runs and even local service on the main lines. Profits accrue from the reduction in the cost of operation as well as in the savings of operation costs on the main line due to the use of the rail car. For suburban service beyond the electrified zone of the railways around the terminals the rail car finds a useful field. At the present time some of the railroads are changing from the steam to the electric engine when they strike the border line. This is bad practice and expensive. The gasoline-operated car is ideal for this service.

"The rail car is useful from the freight standpoint also. The American freight car is too large and expensive to operate for the short hauls. The European size would

be far more logical for a great part of the work that the large cars are used for in this country. The gasoline locomotive would be very useful for certain classes of light freight work, and for l.c.l. freight it would often be possible to put freight bodies on rail car chassis.

"The Mack company is now developing a car using ordinary control but designed to have an engine on each truck. The wide variation in the types of cars demanded and the small demand for cars of one type make it necessary for the units to be adaptable so that they can be made up into various combinations. For this purpose the single truck unit with a 60-hp. engine has proved to be very useful. The 60-hp. type is good because it is possible to use the engines produced by the engine specialists. The same applies to the clutches and transmission systems. Incidently, the power losses in the automobile type of clutch are too large and other types more suitable for rail car use have to be designed.

Transmission Problems

"With the standard truck idea various combinations can be made up. The truck incorporates the engine and drive to one axle as well as the gasoline supply and control. This is one unit. The second unit comprises the car body with 6 ft. by 30 in. trap doors in the floor. The third unit includes the control equipment, which is similar to that used by the subway and elevated railroads. The battery which operates the lighting system as well as the controls is included.

"In using the standard units the simplest type of rail car would have one power truck assembly and one trailer truck. The next form would have two power trucks, or several of these cars could be coupled together and operated off one control. The gear ratios can be altered and, if it is desired to do this, the change-over can be made in four hours."

E. J. Brennan, Superintendent of Motive Power of the Chicago and Great Western R. R., told the story from the railroad man's viewpoint, and from his statements it may be judged that the average railroad man does not favor the light weight tendency if carried to extremes. Ruggedness and reliability are not to be sacrificed, in his mind, for lightness and cheapness. Mr. Brennan told of some of the experiments made in 1910 with rail cars equipped with four-cycle reversible, open-base engines. These were very complicated. They had two speeds, low and direct. Later a T-head was substituted for the head containing the valves on one of these engines, and a compression of 6 1/3 atmospheres was used. This was later reduced to 4⅞ atmospheres. These cars cost 35 cents per mile to operate, and with a trailer 44 cents. They weighed 35 tons empty. Mr. Brennan went on to say:

"We wanted simpler types, so we bought some equipment in 1922 with four-cylinder, 65-hp. engines. These were found not to have sufficient power and they were replaced by Wisconsin six-cylinder 105-hp. types. After running these cars a while it soon became evident that much of the materials were not heavy enough. We were forced to change the drive shaft, for example, until it was twice the original diameter. Also, it was necessary to change the design to make the cars easier riding for the passengers.

"The rail car must be light but it must be rugged. We recently bought a type N.400 Service type. This has now run 64,000 miles without overhaul. It is easier to stop and start than steam equipment would be, and this fact permits more stops to be made and makes the line more popular.

"We have in use a car with a 225-hp. Sterling marine engine. This accommodates 30 passengers with 15 ft. of baggage length and carries a 44-passenger trailer. It is used between Waterloo and Des Moines, Iowa.

"Equipment designed for commercial vehicle service is not good enough for rail service. All the parts on the two-car train described are heavy and substantial, but not excessively so. This two-car train has been so successful that we have ordered two more. It costs 24.98 cents per mile to operate this train, including maintenance.

"The requirements for a successful rail car are, first, an engine which is big enough so that it is generally only running on from 60 to 65 per cent of its rated power. Engines, we have found, do not often give their rated power. Lights should be improved. We find that the bayonet socket is not successful, and we recommend the Edison base instead. Also, the lighting system should be more rugged and really adapted to the severe requirements of passenger rail car work. The center type of lighting we have found to be the best. The cooling capacity of the engine should be large, and in rail car work U. S. standard bolts and nuts should be used, and not S. A. E. The reason for this is that railroad men are used to working with the U. S. and to introduce the S.A.E. standard among them will not only will be confusing, but will be the cause of damaged threads. All engine capacities should be determined with the idea that a trailer will probably be occasionally pulled."

View of Railroad Executive

L. G. Plant of the Rock Island R. R. said that the railroads must be willing to accept considerable reduction in weight and safety factors compared to the all-steel coach. The rail car, he said, can be successfully and profitably used down to thirty passengers. The gasoline car must have more than one engine to be dependable, and he cited the fact that an Eastern road is putting gasoline-electrics with multiple units on its main line.

E. Wanamaker, electrical engineer of the Rock Island R. R., said that the motorization of light service is now here. For many years, he stated, "the concentration has been on the heavy equipment, but the internal combustion engine is best for light traffic whether on rails or by bus and automobile auxiliary lines. The question of fuel may seem a limiting factor, but fuel will always be available from vegetable sources; it can be produced now for 20 cents per gallon and for engines of the Diesel type for about the present cost.

"Steam has drawbacks on light hauls. It is not flexible. for rail car work not more than two types of powerplant need be produced, with various types of control unit. One power unit may be of 60 hp. using gasoline and the other of 300 hp. using Diesel engine and fuel. Service may be divided into light-light, heavy-light, light-heavy and heavy-heavy classes. The 60-hp. engine is satisfactory for all but the heavy service and is easy to operate, and flexible. About 650 r.p.m. would be right for the Diesel with a four-cycle engine."

THE story of Bakelite is interestingly and appreciatively told in a little book bearing that title, of which John Kimberley Mumford is the author and Robert L. Stillson Co. of New York are the publishers. It details early experiments looking to the production of industrially useful materials from the condensate of phenol and formaldehyde and Dr. Baekeland's final success in this line.

It describes the properties of Bakelite and its various commercial forms, as a molding resin, as an indurating material for cloth and paper and as a varnish. The various industrial uses, for electrical insulation, for silent gears, for radio apparatus, etc., are referred to. The last chapter is devoted to the services of Bakelite in the war. The book is written in a breezy, popular style and evidently is intended for the layman rather than the engineer.

Exports of Cars, Trucks and Tires for

COUNTRIES	PASSENGER CARS								TRUCKS					
	Up to $500		$500 to $800		$800 to $2000		Over $2000		Up to 1 ton		1 to 2½ tons		Over 2½ tons	
	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value
Europe														
Austria	2	$916	1	$738	4	$4,300	2	$4,626						
Azores and Madeira Islands	17	2,948	1	600	2	2,760								
Belgium	29	11,816	24	16,505	34	36,225	8	26,912	2	$1,455				
Bulgaria	2	780	1	770	1	870	1	2,313						
Czechoslovakia	5	2,290			6	6,326								
Denmark	39	16,312	42	28,775	49	51,518					2	$3,469		
Esthonia			1	756										
Finland	23	9,206	38	26,492	27	25,875			6	2,415	2	3,180		
France	1	350												
Germany	11	3,205	33	24,015	115	118,989	4	14,028	1	5,900	2	2,067		
Gibraltar														
Greece	9	4,356	24	17,553	14	13,990	1	2,313			1	1,034		
Hungary					7	8,227	3	8,191						
Iceland and Faroe Islands														
Italy	110	31,444			1	2,000	3	16,700	80	21,278				
Latvia			1	800	4	3,995								
Lithuania														
Malta, Gozo and Cyprus	6	2,136			1	1,070								
Netherlands	15	6,917	33	22,693	46	50,090	11	28,237	2	2,136				
Norway	1	400	4	2,741	32	31,853			2	2,175				
Poland and Danzig			1	756	6	7,371								
Portugal			2	1,512	11	12,594								
Rumania														
Russia														
Spain	253	95,473	67	49,093	191	205,655	18	48,190	57	18,446	2	2,067		
Sweden			14	9,285	165	165,318	6	14,150	11	6,046	10	9,132		
Switzerland	18	7,046	12	8,745	33	39,604	3	7,126						
Turkey	14	5,226			5	5,967								
England	301	143,201	204	124,887	179	174,499	26	66,486	10	10,900	26	26,284		
Scotland					1	2,000								
Ireland			1	750										
Yugoslavia, Albania and Fiume	3	1,188												
North and South America														
United States														
Canada	60	22,149	270	164,718	291	315,132	13	34,952	41	44,897	82	128,549	15	$45,532
British Honduras	1	330												
Costa Rica	38	18,434	2	1,379										
Guatemala	1	400			9	10,375								
Honduras			2	1,385	2	1,695								
Nicaragua	4	1,665	2	1,432					1	4,255				
Panama	13	5,568	10	6,661	9	10,568	1	5,060	22	7,832	1	1,744		
Salvador			4	2,216	9	12,529								
Mexico	185	57,378	36	24,755	24	25,329	7	21,050	39	13,891	11	12,728		
Miquelon, Langley and St. Pierre														
Newfoundland														
Barbados	4	1,395	1	750	3	3,156			3	1,462				
Jamaica	15	5,460	24	16,808	13	12,027			16	7,545	8	6,833	1	2,195
Trinidad and Tobago			3	1,929										
Other British West Indies	7	2,456	1	772	2	2,595	1	4,500	1	356	1	1,540		
Cuba	499	158,205	42	29,214	54	62,525	30	83,670	129	25,845	1	1,094	1	2,669
Dominican Republic	31	10,482	4	2,823	1	1,125	1	2,165	11	6,157	2	3,764	1	3,700
Dutch West Indies	5	1,876			2	1,985			3	1,068				
French West Indies	1	460												
Haiti	6	2,219	1	618	4	4,347								
Virgin Islands	5	1,856												
Argentina	564	215,010	212	147,822	404	399,213	33	87,609	31	33,630	28	45,847	15	28,367
Bolivia			1	650	9	10,734	1	3,294						
Brazil	125	44,337	73	50,767	157	155,397	5	15,463						
Chile	33	9,828	6	4,296	12	17,396	2	5,442	54	40,346	21	44,602		
Colombia	26	9,007	14	9,920	22	27,933	2	6,361	13	4,388				
Ecuador	18	7,260			2	2,250	1	2,007	4	1,416				
British Guiana			3	2,266							1	1,196	1	2,002
Dutch Guiana														
French Guiana														
Paraguay														
Peru	68	25,286	14	10,357	28	30,176	1	2,112	22	13,71	4	4,342		
Uruguay	414	123,916	68	42,036	62	66,436	6	17,976	102	26,384				
Venezuela	58	21,916	27	17,909	11	11,303	3	7,151	18	10,387			3	15,095
Asia														
Aden					2	2,107			2	1,400				
British India	59	26,317	112	75,345	48	54,794			8	7,802	9	9,419		
Ceylon	20	9,083	10	7,244	10	9,783			8	9,395	7	8,561		
Straits Settlements	23	10,534	13	9,616	27	27,033								
China	17	5,798	37	27,650	26	35,870			40	14,338	4	4,248		
Chosen	56	17,550												
Java and Madura	24	10,610	41	27,948	60	63,677					2	2,067		
Other Dutch East Indies			5	3,510	4	3,730								
Hejaz, Arabia andIraq	53	19,090	2	1,325										
Hongkong					9	10,386	2	5,800	34	17,845				
Japan	280	88,470	91	64,936	182	207,066	17	48,385	266	224,013	25	33,398	26	69,522
Kwangtung														
Palestine and Syria	51	17,150	9	6,450	15	14,807			22	8,575				
Persia	6	2,420												
Philippine Islands	86	31,810	94	67,485	27	30,921	4	10,500	50	16,970	6	6,316	1	1,600
Russia					1	1,492								
Siam			4	2,565										
Turkey														
Oceania														
Australia	1,182	456,860	1,459	910,095	1,190	1,234,190	32	71,195	92	112,079	28	41,460	54	100,924
New Zealand	16	6,624	97	70,132	156	173,448	12	31,577	11	13,932	7	14,396	8	19,797
British Oceania	1	458	6	4,068	1	1,032					2	2,757		
French Oceania														
Other Oceania														
Africa														
Belgian Congo	5	1,768							8	2,848				
British West Africa			9	5,432	9	7,897			28	21,224				
British South Africa	37	16,651	447	309,702	377	383,482	2	5,223	6	4,773	7	9,071		
British East Africa	11	4,296	10	7,296	20	20,035			4	2,168				
Canary Islands	7	2,860	7	5,092	8	8,186			1	796				
Egypt	10	3,960	4	2,946	1	1,729								
Other French Africa	19	6,709	2	1,182					11	3,732				
Italian Africa	6	2,310												
Morocco	20	7,280	1	701										
Portuguese East Africa	8	3,236	3	2,160	2	2,250			3	1,044				
Other Portuguese Africa	4	1,334							1	450				
Total	5,041	$1,845,281	3,787	$2,521,829	4,239	$4,449,297	262	$710,764	1,276	$784,709	302	$431,165	126	$291,408

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ELECTRIC VEHICLES		PARTS	TIRES						CARS		TRUCKS		PARTS	COUNTRIES
			Casings		Inner		Solid							
No.	Value	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	Value	
														Europe
		$785	150	$2,469	150	$316								Austria
		68	10	104										Azores and Madeira Islands
		559,818	379	6,373	566	1,198			10	$9,782			$4,273	Belgium
		276							1	480				Bulgaria
		222	70	1,864	40	99								Czechoslovakia
		881,264	4,551	43,858	4,302	5,818	86	$3,644					23,414	Denmark
		629	267	5,065	492	1,014			3	1,850				Esthonia
		56,966	187	4,107	115	346							1,103	Finland
		2,271	51	457	25	26			25	36,600				France
		1,826												Germany
		7,125	96	2,359	6	12	63	1,604	1	1,124				Gibraltar
			54	594					8	4,448				Greece
			754	9,414	122	183								Hungary
		28,979	34	619	1,049	1,826								Iceland and Faroe Islands
					23	53							84	Italy
		53												Latvia
		769												Lithuania
		108,230	224	2,251	884	4,627	28	1,379	1	2,014			10	Malta, Gozo and Cyprus
		9,930	1,597	23,333	2,334	3,433	75	2,973	1	1,077			57	Netherlands
		4,103	68	844										Norway
		4,672	130	1,956	1,133	2,624							24	Poland and Danzig
		502												Portugal
		980	500	4,500										Rumania
		24,291	690	16,616	1,460	4,620	523	20,269						Russia
		18,674	1,728	24,179	1,110	2,649	106	3,633	61	59,575			16,489	Spain
		2,184	33	1,550	8	67	8	217	3	2,998			75	Sweden
		3,564							14	7,598				Switzerland
1	$2,506	643,353	8,962	93,723	6,500	10,325	2,457	61,685	518	305,527	51	$17,885	123,071	Turkey
		1,021	45	327			270	8,498						England
		35,427	558	4,248	438	510								Scotland
		166												Ireland
														Yugoslavia, Albania and Fiume
									1	3,335			9,129	**North and South America**
1	3,150	2,184,547	4,696	48,280	1,486	5,951	490	13,051						United States
		389	18	120	18	60								Canada
		3,977	67	1,665	59	154	4	118	2	1,639			49	British Honduras
		3,239	43	581	82	167								Costa Rica
		1,185	100	2,635	102	293	38	1,902						Guatemala
		850	49	718	103	165								Honduras
		15,546	1,477	17,532	1,570	3,199	58	1,282						Nicaragua
		3,683	138	2,537	192	480			10	4,698				Panama
1	460	59,763	4,329	57,853	10,721	17,398	1,041	20,126	3	3,660				Salvador
														Mexico
		764					2	44	4	2,813			257	Miquelon, Langley and St. Pierre
		1,953	98	1,006	56	82							14	Newfoundland
		9,643	283	3,472	412	1,026	27	531						Barbados
		4,220	215	2,886	232	414	8	105	1	1,124			47	Jamaica
		1,942	102	1,370	242	339								Trinidad and Tobago
1	3,340	122,030	6,527	72,990	10,310	17,052	434	9,176					13	Other British West Indies
		11,037	518	5,414	244	465			1	473			12	Cuba
		940	80	734	208	302								Dominican Republic
		2,586												Dutch West Indies
		5,220	97	1,456	216	357								French West Indies
		510	80	615	136	196	4	50						Haiti
		544,247	12,514	133,974	9,462	16,697	271	7,564	144	117,278				Virgin Islands
		1,398	2	75	72	166			4	4,983			13,656	Argentina
		780,476	6,359	60,364	16,313	21,857	106	2,514						Bolivia
		27,727	404	9,052	788	1,678	42	2,277	4	3,457			21,681	Brazil
		26,086	483	6,571	519	913	22	416	1	1,246				Chile
		3,105	156	2,341	41	102	4	274	2	2,093				Colombia
		2,933	21	230	12	18			19	10,452			11	Ecuador
		89	12	119	24	28								British Guiana
		378												Dutch Guiana
		60	80	621										French Guiana
		19,759	1,601	22,718	1,781	3,656	30	1,643	1	630				Paraguay
		22,245	1,839	18,813	2,288	3,364	67	1,152	8	8,920				Peru
		8,688	1,162	13,340	2,304	3,585	8	160	12	12,002				Uruguay
													4	Venezuela
		688	35	359	60	70			11	4,026	2	949	917	**Asia**
		46,054	2,116	16,820	1,257	1,838	109	3,481	397	161,919	60	23,836	10,295	Aden
		2,897	115	1,345	156	230	18	376	15	7,383	34	12,569	60	British India
		9,900	89	1,020	32	53	18	422	68	28,159	24	7,824	192	Ceylon
		10,161	260	2,664	125	560	10	112	1	435			17	Straits Settlements
		285	170	1,389	40	68	10	100						China
		10,689	307	4,384	270	507	102	3,558						Chosen
		5,075	77	1,234	113	240			102	33,366	9	2,934	3,011	Java and Madura
		311	181	1,278	112	139								Other Dutch East Indies
		3,782	124	917	15	28			6	6,079			108	Hejaz, Arabia and Iraq
		197,688	8,418	117,328	3,556	8,436	1,762	29,174	124	59,244	31	14,540	4	Hongkong
		125												Japan
		11,093	483	7,164	705	1,072			10	12,415				Kwangtung
		279												Palestine and Syria
		17,152	5,412	56,272	3,268	5,907	138	3,131						Persia
														Philippine Islands
		967					48	732	16	5,642	24	7,824		Russia
		652	56	537	70	106								Siam
														Turkey
		272,139	3,048	37,973	676	1,593	641	19,892	896	294,040	456	148,805	33,861	**Oceania**
		52,813	1,456	21,277	1,752	2,691	158	9,277	331	234,310	18	7,906	526	Australia
		425	14	274					11	3,290	6	1,956	957	New Zealand
		585	26	199			7	330						British Oceania
		692	37	388	20	43								French Oceania
														Other Oceania
		1,284												**Africa**
		6,380	100	1,445	200	425			55	14,921	30	10,288	1,714	Belgian Congo
		63,741	1,703	22,775	733	1,577	64	1,995	255	156,523			103,271	British West Africa
		7,186	290	2,613	64	95			57	21,841	38	14,323	6,471	British South Africa
		7,826	101	1,426	26	41	38	630						British East Africa
		8,211	39	436	34	48	25	689	5	3,038				Canary Islands
		528												Egypt
														Other French Africa
		1,237												Italian Africa
		811	66	722	82	123	4	97						Morocco
		2,159	37	321	106	208			6	4,465				Portuguese East Africa
														Other Portuguese Africa
4	$9,456	$7,013,178	89,448	$1,043,452	94,222	$166,008	9,424	$240,283	3,229	$1,662,972	783	$271,639	$374,877	Total

Depreciation Is Engineering Rather Than Accounting Problem

Replacement of machinery sometimes deferred until long after time when repair meant economy. Individual groups should be studied. Obsolescence important.

By Harry Tipper

A SURVEY has just been completed of a number of factories in the automotive field to determine the prevailing practice in dealing with depreciation and the importance of obsolescence as a feature of machine changes. The plants covered represented both large and small units, some of whom manufactured a complete product and some of whom bought parts for the complete unit from the outside.

The majority of factories are working on a book depreciation of 10 per cent per year, although some of them are using a figure as low as 7½ per cent, while others are operating on a 15 per cent basis. The average, however, is 10 per cent. But this average means very little.

Actual study of the rapidity of depreciation in groups of similar machines has only just begun and is confined at present to a few of the most important factories. In any case, a history of the automotive business in the last ten years would preclude exact knowledge of the rapidity of wear in many cases of machine tools, because production requirements have increased with such rapidity that a large part of the machinery has been in use only a short time and also because changes in manufacture have been so rapid that obsolescence has been responsible for a considerable percentage of the changes.

Book Depreciation Means Little

Under these circumstances the book depreciation allotted by the automotive manufacturers means very little as a reflection of the actual requirements. It does not take care of the important feature of obsolescence due to changes in the product and changes in the manufacturing arts.

Obsolescence cannot be studied as a general proposition, because it is affected particularly by the progress in a part of the manufacturing process and in certain parts of the product. For instance, in one factory no important changes have occurred in the processes of milling for nearly eight years, so that milling machinery of that age still is suitable for manufacturing outside of practical wear and tear. In the same factory, however, changes in the art of turning, both on automatic and standard tools, have required the removal of certain groups of machines within two years after their installment in the factory.

The same thing, of course, is true to a lesser extent in connection with the actual depreciation of machinery within the plant, so that the arbitrary amount taken by the accountants is of little value in determining the actual progress of wear and the actual point at which repair and rebuilding ceases to be a valuable economy for the manufacturer. The elements involved in a study of depreciation are:

1. Progressive cost in repair, adjustment and other necessary service to the machinery required to keep it at maximum production with the proper tolerance accuracy.

2. The point at which the accumulated wear of the machine requires sufficient rebuilding in order to keep it in production to make such rebuilding uneconomical from a production standpoint.

Type of Machinery Important Factor

This second point must take into consideration any improvements which have been made in the meantime upon the class of machinery involved, whether the machines can be put into maximum production work from the standpoint of quantity and accuracy, whether there will be any additional cost of operating after the machines have been so rebuilt, and the relation of its total cost to the cost of buying and operating new machines of the same type.

The buying and investment items, like machine tools, always have been subject more definitely to the financial outlook of the executives of the company than to the actual production requirements at the moment. Although a period of comparatively low production is the most effective time in which to weed out machinery, just as it is the most effective period in which to weed out the inefficient help, the matter usually is postponed because the financial executives do not feel justified in increasing the expenditures on investment account while the factory is running at a loss or showing practically no profit.

On the other hand, when production is running at full blast, new machinery is added without sufficient examination as to the relation it will bear to the required flexibility, what proportion of idle time is likely to accrue and whether the demands which are to be made upon the machinery are a part of the permanent requirements of the establishment.

Depreciation Charges Inaccurate

Generally speaking, the amount charged off on depreciation account in the automotive field has not been sufficient to cover the replacement required from wear and tear and obsolescence. Furthermore, this amount has been averaged for the entire equipment of a plant where the study requires not averages, but actual records of the cost of the wear and tear and obsolescence in particular products.

Records which have been furnished to AUTOMOTIVE INDUSTRIES in the course of this survey show definitely that the appropriations for new machinery to replace old machinery have been deferred many times until the old machinery was actually a menace to production in the plant. Time after time the records indicate that a dis-

proportionate amount of expenditure on repairs and upkeep will be permitted upon old machinery where it would be a wiser policy to buy the new machinery because the increased investment would be offset by the decreased operating cost.

Depreciation has been looked upon as a problem of the accountant and the financial executives of the company. It is, however, an engineering and production problem, requiring the individual analysis and observation demanded in the management of production itself. One or two of the big factories in this field are now studying depreciation and obsolescence from this standpoint. Committees have been appointed, including men from the engineering and production branches, to study individual machines or groups of similar machines, taking the records of production, idle time out for repair and adjustment, cost of repair and adjustment, drop in production quantity, relations of spoiled work due to lack of accuracy, and addition of new machinery because of obsolescence.

Detailed Study Needed

These studies are necessary to place the depreciation account on a sound basis in connection with all processes of manufacture so complicated going on under the roof of the automotive factory, where are gathered more different operations and processes of manufacture than in any other line of industry. The general machine shop does not begin to diversify to the same extent, the purely wood working establishment has a much better chance to consider things from an average standpoint, and the foundry can work out an average depreciation much more readily.

In the automotive factory, however, with its numerous machine operations, its wood working requirements, its foundry with its special purpose machines, progressive assembly line and other developments, and particularly with its close interchangeable standards of work, offers no opportunity for the set-up of average depreciation accounts on an arbitrary basis of so much per year, particularly as these frequently are laid out with insufficient observation of the actual requirements of the plant.

Present Practice Unsatisfactory

From the discussions which took place in getting this survey together, it is obvious that manufacturers are not satisfied with the general practice of depreciation as it exists today. The tendency in the large plants shows the necessity for a definite series of studies through which the individual requirements for replacement and the general rate of obsolescence for the same machines can be laid down as a practical matter from the operating necessities. If this plan is pursued it will be possible for the automotive manufacturer in the course of a few years to arrange his depreciation in such a way that the required appropriations for machinery can be made at the most convenient time without affecting the investment account to a serious extent. The present practice does not begin to take care of the situation and it leaves the manufacturer in the position of accumulating constantly a charge against investment account without any increase in production, which charge is not covered by the reduction from investment account made through depreciation reserve.

The machinery business suffers a great deal from an alternative scarcity of production capacity and overstock, due to lack of buying. Orderly methods of reserving for depreciation and obsolescence account from proper studies of these requirements will benefit the manufacturer by enabling the machinery man to work on a much better production basis and, consequently, to operate along more efficient lines. The survey just completed indicates the present necessity of engineering studies covering these two phases of the manufacturing problem.

Give Business Fair Deal

(*Continued from page* 854)

that caused great consternation in the Department of Commerce. Among these inhibitions was one restraining the cement makers from gathering data about their trade and sending it out to their members.

Mr. Hoover promptly wrote Mr. Daugherty, asking if this ruling was to be interpreted as applying to all trades. Mr. Daugherty replied in the affirmative, but holding that the association might gather statistics if specially requested by the Secretary of Commerce. But in such a case the information could be turned over to the Commerce Department only and could not be distributed to the association's members.

There is probably no man in the country who understands better than Mr. Stone that our business machine is being slowly, but quite effectively and extensively, remodeled to meet the changed conditions of our highly organized social life. The outstanding feature of the next decade will be the straining after more intensive organization and the development of efficient processes in order to reduce the costs of production. The contribution of the Department of Commerce to this movement has been a ceaseless war on waste. Mr. Hoover has said that 69 per cent of the operations of the clothing industry is consumed by waste; that in the textile industry this amounts to 49 per cent, and not less than 29 per cent in the metals trades.

To eliminate this the Commerce Department has enlisted the cooperation of the various trade associations. Their contribution has been to gather data about the production, prices on closed transactions, distribution, etc., for their own members and the department.

Question Opened Again

The ruling of Mr. Daugherty seriously interfered with this. If it did not end it altogether, it was because the associations hoped for a reversal of the ruling in a court test. The decrees in the tile and cement cases were without binding effect as precedents because they were consent decrees. The whole matter is now open once more and is up to Mr. Stone.

The upshot of it probably will be a repetition of the famous dictum of Theodore Roosevelt, distinguishing between good trusts and bad trusts. We shall very likely learn that there are good trade associations and bad ones; or, better still, that trade associations have their good uses and their bad uses; that when they are getting together secretly to fix prices, hold down production below the public's needs, and ration out their customers among themselves, they are bad associations; but that when they are searching their methods for wasteful operations, gathering information for their own and public use, and in the study of their problems generally throwing light upon the dark places of trade, they are good associations rendering a public service.

SOME work has been undertaken at the Bureau of Standards to determine the lack of ability of solder (tin or lead) to withstand sustained loading, with the object of finding the limits of utility of a soldered joint. In order to obtain these data long time tests are necessary which are at present in progress.

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Truck Use Widens

SLOWLY but surely the steam railroads of the country are supplementing their freight service by the use of motor trucks. The Pennsylvania and the New York Central are doing invaluable pioneering work and the results of their experiments will be awaited with keen interest.

Use of trucks to supplant "peddler" trains in the metropolitan area of New York has been found so satisfactory that five additional trucking zones have been established in and near Syracuse, Newark, N. Y., Rochester, Medina and Buffalo. Freight is trucked from these points to various nearby stations, the trucks replenishing their loads at intermediate zone stations along the line.

No less than 28 tractors, trailers and trucks are used at Buffalo and smaller numbers at other points. Trucks now haul freight to Yonkers not only from White Plains and other points on the Harlem division, but from Brooklyn and lower Manhattan terminals and as far north as Croton. The railroad does not own the trucks which are used, but has entered into contracts with motor haulage companies.

It is such operations as these which ultimately will bring about the universal coordination of the motor vehicle with steam and electric railroads.

Legislation is Convention Topic

ANOTHER evidence of the important place the motor vehicle occupies in the life of the American people is found in the fact that the United States Chamber of Commerce will consider at its annual meeting in Cleveland next month the advisability of advocating enactment by all States of anti-theft legislation in the form of laws requiring registration of titles to automobiles. Without attempting to pass upon the intrinsic merits of the plan proposed, there is much significance in the fact that the subject is to be taken up by so powerful a business body.

The delegates also will consider a recommendation presented by the Western Division, advocating revision of laws relating to Federal appropriations for construction and maintenance of highways so far as they relate to trans-continental highways in public land States, in order that proper cognizance may be taken in the Federal statutes of a situation in the intermountain and semi-desert States where taxable properties are said to be too small in value to permit States to provide funds for good road construction.

Will Balloon Tires Affect Car Life?

AMONG plausible arguments in favor of balloon tires is one to the effect that they tend to prolong the life of a car on account of the greater cushioning effect which they give and the consequent decrease in violence of shocks imparted to the car. If we grant that such shocks are an important factor in determining the life of a car—and it seems reasonable to suppose that they are—it is evident that anything which does decrease their intensity will increase car life.

Some have gone so far as to claim that balloon tires will double the life of a vehicle and it is reported that certain bankers have taken sufficient interest in this claim to inquire what result such a gain would have on the replacement market for cars. The answer which they are said to have received was to the effect that, if such claims are true, automobile manufacturers quickly will take advantage of the fact by lowering prices and production costs to such an extent that in the end the life of the car will be no greater. This would provide a cheaper car with the same life.

There has been some talk about marked savings in chassis weight made possible by the use of balloon tires and it is not unlikely that such savings ultimately will be realized in the design of cars built especially for use with low pressure casings. In the average car material costs comprise a very large percentage of first cost and, since most materials are purchased on a weight basis, decreased weight should mean decreased costs and thus be of considerable importance.

Industry Is in Favorable Position

WHILE freight car loadings, the unfailing barometer of business, have shown a steady decline for five successive weeks, the falling off has been neither sharp nor sudden. A point has been reached, however, where loadings are less than for the corresponding weeks of 1923. Those for the week of March 22 were 8167 less than in the same week last year, and those for the week of March 29 were 28,726 less. Comfort can be found, nevertheless, in the fact that the movement of miscellaneous freight and merchandise, which include manufactured products, is somewhat larger than at the same time in 1923.

Although the figures show a tendency toward general business restriction, they preach at the same time an eloquent lesson in optimism, for the volume of trade is only slightly less than the peak for all time, which means that the American people still are well supplied with money and are purchasing heavily to meet their current needs.

Unless the "psychology of fear" which has been zealously fostered by certain speculative interests, continues to roll up like a snow ball, with increasing uncertainty and lack of confidence on the part of the public, the shrinkage in sales is not likely to reach serious proportions. It is difficult to forecast, however, the extremes to which mass psychology will carry its victims.

FOR this reason it would be foolhardy to attempt to predict how long the present decline will continue or to what lengths it will go. There is no sound basis either for severity or long duration. The country never has suffered from a real depression when all the basic factors have been as favorable as they are today and it probably never will.

The conditions which prevailed in March, 1920, and those which obtain today are not comparable in any sense. Almost everything then was crying for deflation after a long period of expansion, while now there is nothing to deflate. The total volume of buying has been exceedingly heavy for the past two years, but it has been for current needs and not for speculation. As a consequence there has been no heavy over-production of manufactured products. Whatever surplus there is soon will be absorbed and factories will have to operate to meet the day-to-day requirements of the public. At the same time business men will begin to reap the rewards for the caution which has marked their operations since 1920.

So far as the automotive industry is concerned, it threw on the brakes early enough to prevent anything resembling disaster. It went through the winter, for the first time in its history, at full speed and avoided what heretofore has been regarded as an inevitable "seasonal decline" in production. By doing so it gave employment to large numbers of men in a period when they most needed work and it was able to slow up at the most advantageous moment. The dealers who have stocked cars heavily will not suffer because the supply on hand soon will be absorbed.

ALTOGETHER, the industry is in a fortunate position. After two years of capacity operations it needed a breathing space to look the situation over and take stock of itself. That applies both to the manufacturing and merchandising branches.

One or two facts already have become apparent. It has been demonstrated, for example, that the manufacturing capacity of the industry as it stood a year ago was ample to meet the long-swing demand of the public and that the industry would have been better off if some of the factory expansions which have been made had not been undertaken. Passenger car builders will have only themselves to blame if they some day find themselves in the position tire manufacturers are in today. Under-production is much more profitable than over-production and unused factory space returns no dividends. A constant struggle to keep needlessly large factories operating at capacity necessitates a ceaseless effort to cram cars down the throats of dealers and this in turn means high merchandising costs.

THE present situation also has served to put another crimp in the seasonal theory. Sales have fallen off and operations have slowed up at a time when, according to all traditions, they should be at full tide. This would seem to prove conclusively that motor vehicle sales are not of necessity heavier in the spring than at any other time. Demand for automobiles, as we have said before, depends to a much greater degree upon general economic conditions than upon the weather.

Makers Stand Ready to Increase Output

Most of Them Have Reduced Schedules, but Retain Their Complete Working Forces

DETROIT, April 16—Car production at the middle of the month continues to follow the rather closely drawn limits set up by actual deliveries at retail. As a result it is practically certain at this time that the total output of all factories for the month will show a recession from the marks set in the earlier months of the year.

The total will not suffer greatly by comparison with other years, but it will be far below the present capacities of factories. Stocks of cars in the hands of distributors and at factory branches are showing gradual reduction, but no movement has developed as yet which promises a speedy cleaning out of these stored cars.

Say Weather Is Chief Factor

Their movement promises to be gradual for some time, unless a break in weather conditions brings the rush of buying which all factory executives continue to look forward to. The industry is not willing to concede that there is anything more serious than weather conditions to contend with.

Several companies report sales at retail to be exceeding factory capacity, and these companies are working full time and with full crews. The majority of companies, however, are slowed down and are working only part time though retaining practically complete working forces. There have been several closings for periods of two to three days in the early part of the month, but the factories themselves discount these temporary closings and say there is no reason to look for prolonged shutdowns.

Affects Parts Makers

Parts makers have been more severely hit as regards reduced operations than the car companies to this time, this being due largely to accumulation of materials under earlier heavy buying orders. Companies buying for anticipated heavy schedules were quickly stocked when production was curtailed, and shipping specifications were shut off until the accumulated materials had been worked off. This condition led to reports of extensive closings of car companies, but were not founded on facts, the car companies continuing operations on reduced schedules and catching up on stock.

At the present moment the situation may be summed up as showing continuing wide operation practically at capacity in the low priced lines and those selling under $1,000.

Medium priced car builders who have built up stocks of cars during the winter and early year months are working at about half of the usual schedules. High priced lines show reduced operations, but not as severely curtailed as in the medium priced field. This summing up applies to the leading companies.

Business in Brief

NEW YORK, April 14—Reports on car loadings for the week of March 29, showing a decrease of 28,726, as compared with the corresponding week in 1923, alarmed the business world last week until analysis showed that the slump was caused by the falling off in the coal business. In reality merchandise freight was 15,898 cars above last year. The comparison if anything was favorable to this year in that in 1923 the entire business world was traveling at a pace that threatened overexpansion. At the present time conditions are more normal and yet comparisons favor the present.

As reported, car loadings for the week of March 29 totaled 907,548, in comparison with 908,651 the preceding week and 936,374 for the corresponding period in 1923. The record is 1,097,274 cars loaded in the last week of September, 1923. Divided into groups, the loadings of grain, live stock, ore and coke declined compared with last year, while forest products increased 5609 cars.

General conditions are described as irregular, with markets helped by better weather and the approach of Easter. The cities have benefited most, country roads still being poor. The steel trade, too, is quieter.

Crops show improvement because the weather has permitted some field work. In some parts of the South and the Ohio valley the soil has been too wet for working or seeding, while conditions on the Atlantic Coast have been unfavorable. Better weather has helped winter wheat, and spring wheat planting is well advanced over a part of the Northwest.

Bank clearings showed a loss of 10.3 per cent, a total of $7,645,373,000 being reported. However, it is a gain of eight-tenths of 1 per cent over this week last year.

NO VICTOR PAGE RECEIVER

SOUTH NORWALK, CONN., April 15—Judge Edwin Thomas of the United States District Court has dismissed without comment the application for a receiver for the Victor Page Motors Corp. of Stamford, Conn., in which charges of mismanagement and failure to attain corporate purposes were made.

Steinmetz Electric Starts Refinancing

Stockholders Subscribe to Note Issue—Receivership Proceedings Withdrawn

BALTIMORE, April 15—The receivership proceedings against the Steinmetz Electric Motor Car Corp. have been withdrawn and the first step of the new financing has been completed, the stockholders having subscribed to the $60,000 minimum asked for of the $300,000 three-year 7 per cent gold coupon note issue.

The funds from the sale of these notes have been held in trust until the minimum of $60,000 was reached. This amount having been subscribed, the money now is released for the corporation's use. It is planned to offer the balance of the issue to the stockholders of the corporation on the partial payment plan.

Officers of the company say that it now has more unfilled orders for both electric trucks and tractors on its books than it ever had before and that additional orders for its products have been coming in all the month.

Following the refinancing, there has been a stockholders meeting which reelected as directors Herbert A. Wagner, George M. Keller, K. E. Turner, Harrison Wagner, Gerald Priestman, H. B. Le Quatte and Dr. C. B. Ensor.

The new board reelected Mr. Wagner as its chairman, Mr. Keller as president and treasurer and Mr. Turner as secretary and assistant treasurer.

G. M. C. Elects Knudsen Member of Directorate

NEW YORK, April 16—The annual meeting of the General Motors Corp. was held today at Wilmington. It was a quiet session, with routine business holding the attention of the stockholders and executives. All of the present directors were reelected and, in addition, W. S. Knudsen, general manager of the Chevrolet company, was placed on the board.

The stockholders also changed the by-laws by deciding that hereafter the annual meeting will be held on the Wednesday preceding the second Thursday in May each year.

United Motors Handles Ford Delco Equipment

DETROIT, April 14—The special Delco equipment for Ford cars announced by the Dayton Engineering Laboratories Co. will be distributed through United Motors Service, official national service representatives of Delco.

The twenty branches of United Motors in the United States and Canada now have adequate stocks on hand, available for motorists and dealers.

Industry Sets Forth Its Shipping Needs

At Same Time House Committee Is Told of Railway Interpretation of Marine Act

WASHINGTON, April 16—Members of the special committee of the National Automobile Chamber of Commerce have called the attention of the House Committee on Merchant Marine and Fisheries to the interpretation placed on Section 28 of the Jones Merchant Marine Act by the Association of Railway Executives which, if sustained by the Interstate Commerce Commission, would serve to lessen the hardships this section imposes on the automotive industry.

Interpretation of Section

In interpreting the section, the Association says:

"Section 28 does not apply to traffic originating in the United States and moving for export to Canada or through a Canadian port, nor does it apply to traffic originating in the United States and moving through Canada for exportation through an American port.

"Vice versa, Section 28 does not apply to traffic from the foreign ports covered by the order moving through Canadian ports to points in the United States, nor to traffic moving through an American port to a point in Canada or passing through Canada to a point of destination in the United States, nor to traffic originating in Canada and moving to a point of destination in the United States."

It is estimated that 90 per cent of export shipments are routed through Canada.

The automobile representatives in commenting on this interpretation told the House committee:

We have noted this interpretation under the law, to the effect that traffic from a point in the United States passing through Canada to a port in the United States is covered by Section 28, and likewise that traffic originating in Canada and shipped to a United States port is not affected.

Under those circumstances, Canadian factories which supply Canadian trade and, to a considerable extent, export trade, would gain a further advantage over factories in the United States. In this we would find Section 28 tending to drive a certain amount of manufacturing from this country to Canada.

Wish Effective Date Postponed

Despite this favorable interpretation of the enforcement of Section 28 as it touches the automobile industry, the representatives of the N. A. C. C. vigorously voiced their disapproval of May 20 as the effective date for this ruling, which lowers freight rates for American made goods exported in American ships, and urged the application of the Act be deferred.

They further testified as follows:

It will not be entirely satisfactory under Section 28, on account of the 10 per cent export that would be worked under different conditions than the majority. In the meantime, it is our suggestion and our intention to continue contact with the Shipping Board and aid in any practicable way in the development of the American Merchant Marine.

Our opposition to the enforcement of Section 28 at this time, and to all the ports announced, is not in any way influenced by foreign shipping. No such consideration has entered our minds. Witness our record of using American steamer wherever available. We must, however, be seriously concerned about the absolute and particular requirements of our industry.

Pending consideration by the Interstate Commerce Commission of petitions of shippers asking that May 20 be postponed as the effective date for application of Section 28, Senator Curtis of Kansas has introduced a bill extending the date to July 1, 1925, while Congressman Newton of Minnesota has sponsored the same measure in the House.

The Interstate Commerce Commission in its announcement that it would begin hearings on Section 28 tomorrow sets forth that it has received petitions from

(*Continued on page* 893)

Orders for Spring Delivery Placed Early in the Year Will Make Second Quarter One of the Biggest

AN INTERVIEW WITH O. C. HUTCHINSON,
General Sales Manager of the Hupp Motor Car Corp.

By D. M. McDonald,
Detroit News Representative of the Class Journal Company.

Detroit, April 16.

ORDERS for deliveries in April, May and June now in the hands of dealers are sufficient in volume, declares O. C. Hutchinson, general sales manager of the Hupp Motor Car Corp., to insure this quarter's being one of the best the industry has had. Any cause that the industry may have for conjecture over sales possibilities does not or should not apply to the second quarter, he said.

There has not been pronounced falling off in buying so much as there has been a falling off of business on an immediate delivery basis in the first three months of the year, says Mr. Hutchinson. Dealers have simply not been able to deliver the cars they have sold, and this has resulted in the accumulation which for the present has made it necessary for factories generally to operate on replacement or actual retail delivery schedules.

Holding back on deliveries has not been confined to the country or rural districts alone, though it has been more general in these sections because of road conditions, emphasized Mr. Hutchinson. City sales have been made more this year on a basis of spring delivery than normally was to be expected. He adduces this solely to ownership pride in not wanting to subject a new car to vicissitudes of weather when a car at present owned can be used.

The situation is such, however, said Mr. Hutchinson, as to require a more vigorous retail selling effort, an effort which should be all the more intensified because the industry is beset by numerous seasonal and minor economic difficulties. In this again the retail branch has been handicapped by a shortage of good salesmen; a condition not only tending to slow actual sales but also decreasing the ranks of potential new and good dealers. The attraction of salesmen to other fields, notably the real estate field, has imposed increased selling cost in the retail field.

In the tremendous real estate developments now in progress in many parts of the country, responsible for the migration of many car salesmen, Mr. Hutchinson sees an augury of splendid automobile sales possibilities soon to follow. Developments in the suburbs of large cities and in the rural sections means that automobiles will be more and more required for transportation.

To some extent money may be temporarily diverted from automobile purchases to real estate, he said, but each such purchase paves the way for a car sale tomorrow. The automobile salesman now selling real estate will be storing up prospects for the time when he turns again to car sales.

Used cars are just as much a question of individual dealer responsibility as they ever were and no more, Mr. Hutchinson says. The used cars have to be taken in trade and dealers have to sell them. There is no other avenue of satisfactory disposal to an owner any more than there is in several other lines of merchandise. The dealer part in the transaction is to take his trades on a basis that is profitable to himself; not so much on the individual transaction as on the sum total of his business. The question of making the individual trade profitable under present business conditions, he declares, of necessity has to be subverted to the proposal of making the business as a whole profitable.

There is nothing unusual about this situation, said Mr. Hutchinson. It is entirely a part of the competitive condition in which the industry finds itself, and probably will continue to be so for a long time to come. Manufacturers cannot give recognition to it in basing prices or discounts because this would only result in aggravating conditions, as has been illustrated before, and it makes an unfair situation for the buyer with no trade-in.

Tax Bill Rewritten and Goes to Senate

As Reported, It Embodies Recommendations That Were Suggested by N. A. C. C.

WASHINGTON, April 16—The entire section of the new revenue bill relating to automotive products, excepting the preamble was rewritten by the Senate Finance Committee before the measure was reported to the Senate. The bill retains all the tax reductions provided by the House and, in addition, exempts truck bodies up to $200. The purpose of rewriting the section, done at the suggestion of the representatives of the National Automobile Chamber of Commerce, was to clarify its meaning. The rewritten portion, however, as it was finally adopted, was not just what was asked for by the N. A. C. C., but embodies recommendations made by the automobile organization for the bill's clarification.

The principal difference in the wording of the Senate measure and the House measure is the excepting of automobile bodies to be tax free when such bodies are sold for less than $200. This exemption, it is believed, will not mean more than $300,000 or $400,000, but will, it was thought by the writers of the bill, make clear just the intent of Congress.

Smooth Sailing in Conference

The measure, as soon as it is passed by the Senate, will go to conference to be there rewritten by the conferees. Because of the similarity, however, of the two measures, and the automotive tax reduction being, under both bills, about $25,000,000, there will be little reason or cause for any dissension among the conferees over the automobile excise tax reduction.

Should the soldiers' bonus fail of passage, thus relieving the country of approximately $125,000,000 annual taxes, additional reductions in the revenue bill will be possible, and Senator Walsh (Mass.) has announced that he will seek to have all trucks up to $1,000 be tax free. This would mean an additional saving of approximately $15,000,000, or a total of $40,000,000 to the automobile industry.

In commenting on the action of the Senate Finance Committee, Congressman Robert H. Clancy (Mich.) who championed the automobile industry's cause, declared that the committee's action was vital, "because," he said, "it means that our battle in the House has not been in vain."

Continuing, he said:

At my request Senator Walsh made a fight in the committee to increase the parts, tires and accessories reduction from the $20,000,000 gained in the House to $40,000,000, but he lost. He will, however, carry the fight to the floor of the Senate in the next few days.

If the bonus fails of passage over the President's veto we will make a drive for additional millions and it is not improbable that considerable additional relief can be granted. The big thing, however, as I see it, is not so much just how much relief was afforded the automobile industry as the admission that the tax should be repealed and it will only be the question of subsequent Congresses eleminating entirely —as they should—all taxes on automobiles, parts, trucks, etc., insofar as they were taxed for a war revenue measure.

COMPARISON OF HOUSE AND SENATE AUTOMOTIVE SECTION OF NEW REVENUE BILL

WASHINGTON, April 16—The following shows how the House automotive section of the Revenue Bill as adopted by the House was changed by the Senate Finance Committee before the measure was reported to the Senate for action. The preamble remains unchanged. It reads as follows: "On and after the expiration of thirty days after the enactment of this Act there shall be levied, assessed, collected, and paid upon the following articles sold or leased by the manufacturer, producer, or importer, a tax equivalent to the following percentage of the price for this sold or leased:"

HOUSE BILL	SENATE BILL
(1) Automobile trucks and automobile wagons (including tires, inner tubes, parts and accessories therefor, sold on or in connection therewith or with the sale thereof), 3 per centum; Provided, That this paragraph (1) shall not apply to automobile trucks or automobile wagons (nor to the chassis thereof if sold separately) if the selling price of the chassis of such trucks or wagons is not in excess of $1,000.	(1) Automobile truck chassis and automobile wagon chassis sold or leased for an amount in excess of $1,000, and automobile truck bodies and automobile wagon bodies, sold or leased for an amount in excess of $200 (including in both cases tires, inner tubes, parts, and accessories therefor sold on or in connection therewith or with the sale thereof), 3 per centum. A sale or lease of an automobile truck or of an automobile wagon shall, for the purposes of this subdivision, be considered to be a sale of the chassis and of the body.
(2) Other automobiles and other motorcycles (including tires, inner tubes, parts, and accessories therefor, sold on or in connection therewith or with the sale thereof), except tractors, 5 per centum	(2) Other automobile chassis and bodies and motorcycles (including tires, inner tubes, parts, and accessories therefor sold on or in connection therewith or with the sale thereof), except tractors, 5 per centum. A sale or lease of an automobile shall, for the purpose of this subdivision, be considered to be a sale of the chassis and of the body.
(3) Tires, inner tubes, parts, or accessories for any of the articles enumerated in subdivision (1) or (2) sold to any person other than a manufacturer or producer of any of the articles taxed under subdivision (1) or (2), 2½ per centum.	(3) Tires, inner tubes, parts, or accessories for any of the articles enumerated in subdivision (1) or (2) sold to any person other than a manufacturer or producer of any of the articles enumerated in subdivision (1) or (2), 2½ per centum. This subdivision shall not apply to chassis or bodies for automobile trucks, automobile wagons, or other automobiles.

UNIVERSAL JOINTS FOR CARS

ALLEGAN, MICH., April 15—Blood Brothers Machine Co. of this city, which until some time ago specialized on universal joints for motor trucks, has come on the market with a lighter design, suitable for medium size passenger cars. It is of the same design as the company's larger joints.

Dana Sells Chicago Fuse Stock to Its President

CHICAGO, April 14—There has been a reorganization of the Chicago Fuse Manufacturing Co. following the purchase by President W. W. Merrill of the remaining block of stock held by A. D. Dana, former chairman of the board.

The capital stock has been changed from 7500 shares of $100 par value to 60,000 shares of no par value. Of these 30,000 were immediately subscribed for, a considerable number going to Mr. Merrill and his associates, who now own the controlling stock. There will be no change in policies, methods or officers.

Rauch & Lang Plans Greater Production

Difficulties That Arose from Changing to Taxicab Field Being Smoothed Out

CHICOPEE FALLS, MASS., April 15—H. W. Steiner, president and general manager of Rauch & Lang, Inc., whose plant has been offered for sale by the city of Chicopee for taxes, said today that an extension of time has been granted until May 1, and that arrangements would be effected by which the company's production of gasoline and electric taxicabs would go forward uninterruptedly.

The schedule, he said, calls for successive increases of production between now and September to fill orders already in hand. Twenty gasoline cabs a month are now being made, he said, which gradually will be raised to fifty. Production of electric cabs is said to be about six a month.

Large outlays and various difficulties incidental to entering the taxicab field cramped the concern temporarily, he stated, but most of the difficulties have been smoothed out, and orders and prospects warrant an optimistic view of the future.

A portion of the Rauch & Lang plant was leased some months ago to Stevens-Duryea Motors, Inc., and the two concerns are carrying their production on independently under the same roof. The old Stevens-Duryea plant is in use for storage. At the recent annual meeting of Rauch & Lang, Inc., Mr. Steiner was chosen president and Frank H. Potter of Chicago, treasurer.

Relative to the Springfield Coach Works, whose plant is also up for sale for taxes, the president, A. U. Premont, declares that steps had been taken to reorganize the company, meet the obligation and obtain additional working capital. This company has been devoting a large share of its production to bodies for the Rauch & Lang taxicabs.

New York March Sales Doubled Month Before

NEW YORK, April 15—Sales in the metropolitan district during March more than doubled those of February of this year but fell slightly below those of March, 1923, according to the Monthly Sales Analysis published by Sherlock & Arnold. There was a gain over last March in the low and medium priced class but a falling off in the higher priced.

For the first three months of this year, sales of cars of all classes follow: January, 2840; February, 4171; March, 8853; for the quarter, 16,864.

In 1923 the sales were as follows: January, 3015; February, 3381; March, 8871; for the quarter, 15,267.

The sales in 1922 follow: January, 2297; February, 2503; March, 6984; for the quarter, 11,784.

In the low and medium priced field four makes showed sales during March of this year in excess of 400 and two others greater than 100. In the higher priced class, two makes were in the lead with sales in excess of seventy. The others dropped considerably behind.

Recapitulation for the year is as follows:

	Medium and Low Priced	Higher Priced
January	3,548	292
February	3,814	357
March	8,179	674
Total	15,541	1,323

BANK PREDICTS GOOD SPRING FOR INDUSTRY

MADISON, WIS., April 14—"The automobile is coming to be virtually as much of a family necessity as the kitchen stove, and spring orders indicate that every family in America that can afford is going to have at least a family flivver," says the current issue of Current Business Survey, published monthly by the Commercial National Bank of Madison, Wis. "A healthy, uniform improvement in general business characterized the past month's progress," the bulletin says.

Studebaker Operating on Capacity Schedules

SOUTH BEND, IND., April 15—In a statement issued by A. R. Erskine, president of the Studebaker Corp., it is declared that the Detroit and South Bend plants are operating at capacity on schedules of more than 14,000 cars for April and May each, these schedules being justified by dealers' demands and current deliveries to consumers, which, in a number of localities are greater than those of last year.

Mr. Erskine, speaking with what he believes to be conservative optimism, predicts that when the year is over, the volume and profits reported by the automobile industry will compare favorably with results shown by steel, railroad or other big industries of the country. He says there is no danger of a cut in the 10 per cent dividend on Studebaker common, as profits considerably exceed dividend requirements and promise to do so throughout the year, even with the 20 per cent restriction in volume of business which now seems probable.

MILTON SETS MILE RECORD

LOS ANGELES, April 14—In speed trials over the bed of Dry Lake, near here, Tommy Milton in a Miller Special traveled an official straightaway mile at the rate of 141.15 m.p.h., a record for a 122-in. car. In a 183-in. Miller he did the mile at 151.26 m.p.h.

Bank Group to Buy Cab Owners' Notes

As Result of Arrangement, Checker Has Resumed Operations in Its Two Factories

KALAMAZOO, MICH., April 15—The Checker Cab Manufacturing Co. has resumed operations in both plants and within thirty days will be furnishing employment to 350 to 375 men and turning out taxicabs at the rate of 100 a week.

Announcement to this effect is made by John Campbell, president of the company, and is the result of an arrangement with a group of bankers for the purchase of a minimum of $4,000,000 annually of cab purchasers' notes, covered by chattel mortgages on cabs sold and carrying provisions for reductions by monthly payments during periods of twelve to eighteen months.

This contract, together with contracts now existing, will give the concern all the funds needed in that respect and will insure uninterrupted operation from this time forward, it is stated.

According to Mr. Campbell, out of $5,000,000 in similar notes disposed of, of which $2,250,000 are not yet due and remaining unpaid, there is not a single delinquent payment due.

Mr. Campbell added that within the last nine months the Checker Cab Manufacturing Co. has successfully introduced its products into 100 cities and that the next year will see that number greatly augmented. A very important contract has just been closed with the Fuller Taxicab Corp. of Los Angeles, an auxiliary of the Motor Transit Co., a large operator of buses on the Pacific Coast.

"The delay in closing for the sale of our cab paper has somewhat interfered with our operation this year," said Mr. Campbell. "But despite that we should produce 3000 to 3600 cabs during the next nine months. To do that will mean full operation of both plants and a weekly payroll of $25,000."

Davis, Director, Named as Receiver for Morgan

KEENE, N. H., April 16—Judge Sayer of the Superior Court has appointed Sidney L. Davis of Newark, N. J., receiver for the Morgan Manufacturing Co. This action was taken on the petition of the stockholders, who allege mismanagement by the president, Bernard F. Morgan. Mr. Morgan has recently withdrawn from the concern. Mr. Davis is one of the directors and one of the voting trustees delegated to manage the company's affairs pending outcome of litigation in the case. The other voting trustees are Orville E. Cain, Philip H. Faulkner and Arthur L. Wright, Keene, and Richard K. Newman, Hartford, Conn. These trustees will continue as advisers of the receiver.

G. M. Makes No Plans to Get Fisher Stock

Has Discussed Informally Question of Adding to Holdings in Body Company

NEW YORK, April 15—A rumor spread through the financial district this afternoon to the effect that the General Motors Corp. was negotiating for the purchase of the 240,000 shares of common of the Fisher Body Corp. not owned by General Motors. It was said that the offer would be an exchange of seventeen General Motors common shares for each share of Fisher Body common.

The rumor, however, is denied by President A. P. Sloan, Jr., of General Motors, although he admitted that such a transaction had been discussed at different times by executives of the corporation. It is said that purchase might be brought about some time in the future, but at the present time no serious consideration has been given the matter.

In denying the rumor, Mr. Sloan said:

The General Motors executives have discussed informally from time to time with the executives of the Fisher Body Corp. the subject of absorbing the outstanding stock of that company. However, no agreement of any kind has been arrived at between the two companies and there is no basis of fact in the reports on this subject which have been published today.

General Motors owns 60 per cent of the outstanding common stock of the Fisher Body Corp. and there has been no change in the relations existing between the two companies.

Following the publication of the report and before Mr. Sloan's denial, Fisher Body advanced eight points on the Stock Exchange.

U. S. Rubber Dividend Earned First Quarter

NEW YORK, April 15—The annual meeting of the United States Rubber Co. resulted in the reelection of the retiring directors and the election to the board of Sir Charles B. Gordon and Matthew C. Brush. One of the vacancies so filled was caused by the retirement as a director of Frank A. Vanderlip.

Reporting on the first quarter of the year, C. B. Seger, chairman of the board, declared that sales for that period were satisfactory and that the quarterly dividend on the 8 per cent preferred stock was earned within the quarter with a fair margin of safety.

Discussing the corporation's annual report, sent to stockholders several weeks ago, Mr. Seger said in part:

In 1923 two-thirds of the $186,000,000 total sales produced sufficient net profit to provide for all fixed and other charges, including depreciation of plants and for payment of preferred dividend, leaving a balance of $1,800,000 for surplus. Hence the problem of future earning power is confined to the tire business. In this connection the hope expressed by your board that results from tire sales during 1924 will show substantial improvement has been fully justified by the fact that it was proportionately realized in the first quarter, and the outlook for a continuance of this improvement is encouraging.

Results from sales of all other commodities during the first quarter of 1924 were quite satisfactory in view of seasonal condition, with the result that the quarterly dividend on the 8 per cent preferred stock was earned within the quarter, with a fair margin of safety after all charges, including full charge for depreciation. Sales for the first three months are always relatively light, due to the seasonal nature of the business.

Dividend for Quarter Declared by Goodrich

NEW YORK, April 17—No change in the personnel of the B. F. Goodrich Co. occurred as a result of the annual meeting held yesterday, all retiring directors being reelected and officers reappointed without change.

The stockholders also ratified the reduction in the authorized but unissued common stock capitalization from 1,500,000 shares of no par to 750,000 shares and voted to retire 11,880 shares of preferred stock in accordance with charter provisions.

The regular quarterly dividend of $1.75 a share on the preferred stock was declared, payable July 1 to stockholders of record June 21.

Reporting that the estimated earnings for the first quarter were in excess of bonds interest and preferred dividend requirements, President B. G. Work said:

While it never has been the policy of the company or of the present management to look into the future and prophesy results, it seems advisable, in the interests of the stockholders, to depart from the general rule at this particular time.

As everybody knows, the rubber industry as a whole has been passing through a period of depression during the past few years, and our company suffered with the rest. The turn of the year brought a substantial improvement to the industry, and judged by the results of the first three months' operations of our company, the management ventures to predict that we may look forward to the future with confidence.

American Makes Shown at Amsterdam Exhibit

WASHINGTON, April 15—Favorable position of American motor vehicles in the Netherlands market was indicated at the International Automobile Exposition just held at Amsterdam, the Automotive Division of the United States Department of Commerce has been advised by Vice-consul Doyle at Amsterdam.

Mr. Doyle advises that twenty-nine different American makes were shown in comparison with seventeen French makes, ten German and seven English, and lesser numbers of other nationalities.

He further states that representatives of American cars are optimistic over prospects for 1924. Dutch buyers, he concludes, are showing a tendency to purchase low priced automobiles in place of motorcycles, and in the case of moderate priced cars to prefer closed types.

Australian Company to Make G. M. Bodies

Will Be Used on Cars for Local Trade—Arrangement Made Will Reduce Cost

NEW YORK, April 17—The General Motors Export Co. has effected an arrangement with Holdens Motor Body Builders Limited of Adelaide, Australia, to supply bodies to the Australian trade for General Motors cars. Holdens has set aside all of its new Woodville plant for this purpose, equipping it with modern machinery and systems for building bodies.

The effect of this deal will be to bring down the cost of bodies for General Motors cars sold in Australia and to make certain that these bodies are in every particular equivalent to the former Australian bodies and to the American and Canadian bodies built by the General Motors Corp. At the same time, it is pointed out, this arrangement lives up to the spirit which is behind the Australian Government policy of fostering the body building industry in Australia.

General Motors Export Co. has sent experts in body building from the United States and Canada to assist the Australian concern in perfecting the personnel and operations in the new plant. As far as possible all materials for these bodies will be obtained in Australia.

Australia Has Industry

This deal has been brought about by the peculiar conditions which exist in Australia. Prior to 1916 Australia imported cars complete with bodies, but in that year, as a war measure and to conserve shipping space, an embargo was placed on motor cars. Protest on the part of dealers resulted in the Government permitting the importation of chassis, bodies being made locally. This started a new industry for Australia, that of body building.

The body demand exceeded the supply and the Australian body builders never have been able to catch up with orders, the result being high prices for bodies, while individual preference crept in until each distributor was ordering his bodies in a certain way and standardization for the body manufacturer was found impossible. It is thought that this problem will be partially solved at least by the General Motors arrangement with Holdens.

BALLOON TIRES ON GARDNER

ST. LOUIS, April 15—Gardner cars are now being fitted with balloon tire equipment at extra cost. The equipment consists of five balloon tires, four 21 in. Tuarc offset disk wheels, Ross cam and lever steering gear, with 18 in. wheel and a spare tire cover. No variation in equipment will be made, and no balloon tires will be fitted to wood wheels.

Industry Sets Forth Its Shipping Needs

At Same Time, House Committee Is Told Interpretation of Marine Act

(*Continued from page* 889)

the National Industrial Traffic League, the Millers' National Federation, the Maritime Association of the Boston Chamber of Commerce, the Texas Gulf Sulphur Co. and the Western Petroleum Refiners' Association, representing "shippers generally throughout the United States."

Practically every shipping and industrial witness before the House committee this week testified that he favored the creation of a merchant marine, and did not seek in any way to embarrass the Shipping Board, but added that in his opinion enforcement of the section at the present time would not promote the interests of an American merchant fleet. By adoption of the Newton proposal, it was argued, time would be given for a thorough investigation of the needs of the American Merchant Marine and the possible effects of the section.

Say U. S. Ships Insufficient

The point that the Shipping Board at present has not sufficient vessels to take care of American exporters and for this reason Section 28 should not be made operative on May 20 was made by the representatives of the automotive industry.

They presented their viewpoint to the committee as follows:

The automobile industry has tried to use and has used American ships wherever and whenever it has been possible and is using American ships to numerous ports. We use the Port of New York almost exclusively.

The need of our business is such that there could scarcely be too many sailings out of the Port of New York to suit us. In other words, it is our opinion that if the Shipping Board wishes to give us what we term "adequate service" under this Section 28, they will not only have to continue all the sailings which they have at present out of the Port of New York, but also give us ship for ship, American flag sailings, in place of all the foreign sailings out of the Port of New York.

List of Shipping Required

For the ports of Australia we need six sailings per month.

For the ports of Scandinavia, including Gothenburg, we need weekly sailings.

For the port of London, and by this we mean Surrey Commercial Docks and not Tilbury Docks, we need weekly sailings.

For the port of Rotterdam we need weekly sailings.

For the port of Antwerp we need weekly sailings.

For the port of Havre, under present economic conditions in France, we can do with two sailings a month.

Cars are beginning to move to Germany, and if present indications can be believed, we shall need at least three sailings a month to Hamburg.

To Buenos Aires we need weekly sailings; at least two freight sailings a month in addition to the existing passenger steamer service.

To Montevideo the same condition prevails.

To Santos and Rio de Janeiro we need at least four sailings a month. In other words, the service to these ports should be the same as to the River Plate, all steamers making the four ports.

To the ports of the Dutch East Indies we need two sailings a month.

Summarized, this means a total of forty-five American sailings from the Port of New York to the ports specified. Contrasted with this, the Shipping Board publishes fourteen American sailings per month from the Port of New York to these ports. Shipping Board figures show 28 per cent of the tonnage of automobile exports moving in American ships and 72 per cent in foreign ships.

These percentages are in direct ratio of American to foreign sailings from the Port of New York. However, it is our belief, based on the following facts, that Section 28 will not turn automobile exports to American ships in the manner expected from this Act.

Automobiles are sold f.o.b. factory. The foreign buyer can, and does to a very large extent, control the routing of his property, and require shipment within specified credit-time limits. Under Section 28 he will still be in position to secure the benefit of export rail rates, lower than domestic rates except as to shipments wholly within the United States.

The industry was represented by E. N. Hodges, Hupp; M. C. Reichert, Studebaker; M. Goetchius, General Motors; J. S. Marvin and George F. Bauer, National Automobile Chamber of Commerce, and H. M. Salisbury, Maxwell.

HAWKINS STATES WEAKENED MARKET IS PARTLY DUE TO ACCUMULATION OF BIG STOCKS

DETROIT, April 15.—Norval A. Hawkins declares one of the reasons why business is slow in the automotive field is that buyers know they can get practically any make of car they want any time they want it, and for that reason are in no rush to buy.

The policy of building up a stock of cars so that buyers can get them without difficulty has to a certain extent weakened the market, he declares.

The principal reason for a spring buying rush, asserted Mr. Hawkins, was the knowledge of the fact that there were not enough cars to go around at that particular season. Under this condition people rushed to get their orders in and took their cars as fast as they could get them. Today that condition has been reversed and the average buyer knows there are plenty of cars and no need to hurry.

Buying of the year to date has shown no indication of any manufacturer getting all the businnss no matter how many cars he had ahead to meet the demand, Mr. Hawkins said.

People are continuing to spread their buying over all the leading makes, he said, indicating that it is more a matter of selling organization than supplies of cars or particular designs of cars. As long as there is aggressive selling effort generally no manufacturer will get any more business than the strength of his selling organization entitles him to.

DEPENDABLE TRUCK CITED

GALESBURG, ILL., April 15—Judge FitzHenry in Federal court in Peoria has cited the Dependable Truck Co. on involuntary bankruptcy proceedings. Jerry Harn, attorney for a small group of former employees, brought the action to halt disposal of the company's assets at judgment sale to satisfy other creditors. It will probably be several weeks before schedules of assets and liabilities of the company can be compiled.

March Output Total Climbs to 378,000

NEW YORK, April 15—Revision of its figures by the Traffic Department of the National Automobile Chamber of Commerce places March production at 378,000 cars and trucks, instead of 356,509 as estimated at the first of the month. Instead of exceeding March of last year by only half of 1 per cent, there is a 7 per cent difference in favor of last month.

This surprising total for March shows the production speed at which the industry was traveling for the first quarter of this year, for March's 378,000 is one of the best months on record. It is in excess of any of the first three months of last year and only about 16,000 behind the record month of the industry—last May, when the count showed 394,088.

It is an increase, too, of $\frac{4}{5}$ per cent over this February, which, according to the first announcement, was 3 per cent in excess of this March. This, however, is only in keeping with the record of last year, when that March increased 28 per cent over the February production of 276,934.

New Record of Carloads

James S. Marvin, manager of the N. A. C. C. Traffic Department, also has discovered another achievement for March, shipping in that month having created a new record of 54,286 carloads. Figures show that the railroads are gaining over driveaways in deliveries, driveaways decreasing in comparison with rail shipments. There were more driveaways in February than in March, the count being 41,545, against 42,584. Boat delivery also is suffering, for whereas there were 1908 boat loads in March of last year, this March there were only 500.

Touching on the rail situation, Mr. Marvin reports a car surplus of 248,301 for the week ending March 29, an increase of 35,208 over the previous week, while the shortage increased to 364.

Invitation Accepted by 8 Pan Americans

Forty Delegates in All Are Expected to Attend Highway Congress in June

WASHINGTON, April 16—Eight of the forty delegates from Latin American countries who are to make a field study of highways in the United States this summer, as guests of the Highway Education Board, have formally conveyed through the Department of State the invitations extended them. Other acceptances are expected daily.

Not only will the delegates cover a tour of several thousand miles by automobile and rail during June, but in May they will attend the Motor Transport Congress to be held in Detroit. It is planned to show the delegates what the automobile has done for the United States and enable them to take this concrete picture back to their respective countries.

The eight delegates already heard from will represent Argentina, Chile, Uruguay and Salvador. Nations from which delegates are yet to be reported include Bolivia, Brazil, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru and Venezuela. The delegates from the countries will be known as the Pan American Highway Commission.

The itinerary of the commission has not yet been definitely settled upon. States to be visited will be chosen where the climatic, soil, topographic and financial characteristics as closely approximate Latin American conditions as possible, and where, too, the commission will have an opportunity to study the most approved highway engineering systems in the United States.

Ford Motor to Double Size of Chicago Plant

CHICAGO, April 14—In existence only since last January as a producing unit, the assembly plant of the Ford Motor Co. at Hegewisch, a Chicago industrial district, is to be doubled in size. Contracts for the additional construction have been awarded, and actual building will be commenced in a very short time.

It was announced when work for construction on the first half of the Hegewisch plant was commenced that provision was made for extensive expansion. How far the expansion program will be carried remains for developments, but with the seventy acres already acquired and large areas available, the company will not be stopped for the want of ground space. The present plant covers something like sixteen acres.

From 3000 to 3500 men are employed at present. On one record day they are accredited with turning out 200 assembled cars.

ASSOCIATION MERGER REACHES FINAL STAGE

CHICAGO, April 12—Final steps toward formal amalgamation of the American Automobile Association and the National Motorists Association were taken in Chicago yesterday. The long-discussed merger now is accepted as substantially an established fact, details only remaining for orderly attention.

Committees representing each group met in separate sessions and agreed to go through with the unification program. The N. M. A. vote was unanimous, the committee finding disagreements only in minor matters relating to the draft of conditions which will be presented to the A. A. A. The final meeting will be held within sixty days, and the merger officially effected.

New Company in Chicago Succeeds Master Motors

CHICAGO, April 15—Application for a charter of incorporation has been filed by the Master Motor Truck Manufacturing Co., a new concern, which has taken over the physical properties, trademark and good will of the Master Motors Corp.

M. S. Rosenfield was president of the Master Motors Corp. While formal organization is to be worked out by the new company, it is said C. C. Smith will serve as president and general manager. Mr. Smith is a widely experienced truck builder, having had a hand in constructing the Randolph truck which flourished years ago.

Theodore B. W. Zumstein will be in charge of sales and will be assisted by Robert Crowthers, who also will handle the advertising.

The Archer Avenue plant has capacity for 174 trucks a month. The company will continue the production of heavy service trucks and making of buses. Fiscal details will be announced later.

Towson Balance Sheet Shows No Bank Loans

DETROIT, April 15—Towson Body Co. in its balance sheet of Feb. 29 lists assets of $6,153,766, with a surplus of $3,745,341. Current assets, including $615,720 in cash and $1,942,309 in inventories, aggregate $3,682,939. Current liabilities are $573,059. Permanent assets are valued at $2,371,481.

The balance sheet shows no bank loans and no funded obligations, other than a land purchase obligation of $22,000. Reserve for contingencies is $150,550, and reserve for Federal taxes for the fourteen months ending Feb. 29 is $282,584. The Towson company was formerly the Anderson Electric Co.

Too Much Regulation, Truck Operators Say

Hearings by Board of Equalization in California Rouse Trucking Interests

LOS ANGELES, April 16—With regulation of motor transport by the Railroad Commission being advocated in many States, California truck operators are complaining against too much regulation. The entire trucking industry is very much disturbed as the result of hearings which are being conducted in various parts of the State by the Board of Equalization, under provisions of an act passed by the legislature last year.

The law provides that all operators of vehicles engaged in the transportation of persons or property for hire must apply to and receive from the Board of Equalization a permit if they operate other than exclusively within municipalities.

The same law provides for the payment of 4 per cent of the gross receipts from the operation of these vehicles. The money is to be used for highway maintenance.

Failure to make the payments is punishable by a fine not exceeding $500 or imprisonment up to six months, or both fine and imprisonment. The situation has put operators in considerable of a frenzy and already threats have been made to attack the constitutionality of the law.

Railroad Commission Regulations

Hearings that have been held by the Board of Equalization have been attended by representatives of the Railroad Commission. California's transportation act gives the Railroad Commission jurisdiction over truck transportation, both as public carriers and contract carriers. Little effort has been made to regulate any other than public carriers until recently, when the commission ordered a number of contract carriers to suspend operations.

Truck owners who class themselves as free lances, but whom certified carriers call "wild catters," are in a serious predicament. They fear that as soon as the Board of Equalization gets them listed for the 4 per cent tax the Railroad Commission will require that they apply for certificates or cease to operate. The claim is made that if they have to withdraw their services from the public, truck transportation in California will become monopolized by holders of certificates.

AVERY ANCILLARY RECEIVER

MILWAUKEE, April 15—Arthur J. Pellette, attorney, has been appointed ancillary receiver of the Avery Co., Peoria, Ill., for the eastern district of the Federal court in Wisconsin. The property in this district consists of the Avery gas engine works at West Allis, valued at $775,000 in the bankruptcy schedules.

Good Sales in April Hinging on Weather

Much of Deferred Business in March Expected to Be Transacted This Month

NEW YORK, April 14—Better reports of sales of automobiles throughout the country are expected to follow the improvement in weather conditions, because of a backward spring many sections failed to develop in March the business that was anticipated for that month. Much of this deferred buying will be made up this month so that April doubtless will justify the confidence reposed in it by dealers generally. Few dealers but are confident that the spring season will prove to be strong from the selling standpoint.

Inasmuch as manufacturers followed exceptionally high schedules during the first quarter of this year in order to anticipate the spring demand, the slowing down in operations that is reported by many producers is not wholly unexpected. Schedules are being reduced from the high level of the first three months of this year in those plants that have been operating at capacity and will not be increased until April gives assurance that the expectations of the manufacturers will be realized.

Sales to Govern Operations

Manufacturing programs for subsequent months will be governed in a great measure by the actual sales reports for the first half of this month. Producers are in a position to augment their schedules as soon as conditions in the retail field justify it, but they will not proceed along lines previously followed if there is any indication that by so doing they will overload the market. Stocks in dealers' hands are not alarmingly large at present, but they are sufficient not to warrant capacity operations on the part of producers until a strong buying movement has set in.

There is nothing whatever in the situation to cause apprehension. A year ago, with a comparatively light first quarter in the total output of motor vehicles, manufacturers found themselves faced with a condition they had not expected; an unusually heavy buying movement had started, and because of the light production there was not a sufficient supply of cars on hand to meet it. The result was that plant schedules were immediately increased so that in the second quarter the total output reached the record breaking figure of 1,155,290.

That quarter was the highest of the four for last year, the third falling off to 1,000,744 and the last to 981,-364. In the first quarter, output amounted to 875,503.

This year manufacturers, instead of waiting for the demand to come and then catching up with it, exerted all efforts the first quarter to produce enough cars to supply the retail trade when the spring season opened. The result was that during the first quarter of this year 1,040,092 cars and trucks were produced, a total that exceeded every quarter of last year with the exception of the second. By maintaining high production schedules the first quarter, employment was given to labor during a period when it stood most in need of it. It is not expected now that production for the second quarter of this year will equal that for the same period a year ago.

USED CAR SHIPMENTS TO JAPAN INCREASING

AKRON, April 16—The export department of the Firestone Tire & Rubber Co. has noted a considerable increase in shipments of used cars to Japan.

This increase is due, the department states in an authorized statement, to the shortage of rickshaw men resulting from both the earthquake and their employment in rebuilding. Japan has also been one of the large importers of American tires since the disaster.

Lumber Trade in South Reports Slower Demand

ATLANTA, April 16—A marked decline in maple, ash and elm demand from the northern and eastern automotive body concerns and from automobile manufacturers is reported by lumber distributors in the Atlanta market, who state the decline has been particularly sharp the last two or three weeks.

For several months the automobile trades have been taking practically all the thicker dimensions of these items southern mills could produce, but the present demand has fallen considerably below the supply, and for the first time in months mills are accumulating stocks. The reason for this decline appears uncertain, as two months ago the mills were looking for a continued heavy demand through the spring months. Most lumber mill men at this market, however, believe the lull is only of a temporary nature. Prices remain unchanged, all thicker dimensions in principal demand by the body trades holding to the same level as has prevailed for several months.

No Signs Yet Given of Tire Curtailment

Both Goodyear and Goodrich Deny They Contemplate Any Reduction in Output

AKRON, April 16—Up to the present time the tire industry here has given no definite indication of a reduction in operations due to a reported curtailment in automobile production and an alleged over-production of tires.

Some of the larger companies have denied definitely rumors and reports regarding curtailment, which have spread recently in and out of the tire capitol. The B. F. Goodrich Co. and the Goodyear Tire & Rubber Co. have both issued official statements, in which the deny they were contemplating any reduction.

According to information available here, output of tires for the entire country at the present time, figured on an annual basis, is between 55,000,000 and 60,000,000 units.

Truck tire sales have shown a healthy increase over the corresponding period of last year, according to some of the truck tire experts connected with the larger rubber companies.

The increase during the past few weeks is due primarily, it is stated, to preparations by truck owners in the rural sections of the country for work as soon as highway conditions permit, while the increase for the first quarter over the corresponding period of 1923 is attributed to increased industrial activity, which is bringing back into operation the excess number of trucks which have been in the hands of owners during the last few years.

Original Equipment Gain

The original equipment demand has also materially increased with the greater production on the part of truck builders.

For a long time after the depression, the rubber tire industry found that many trucks which were purchased during the boom period found themselves without employment because the market had been unduly expanded. For that reason truck tire sales were not commensurate with the number of vehicles owned in the country.

Since the revival of business, however, this surplus has been gradually placed into operation and the market prepared for an increase in the number of new trucks and tires which can be absorbed.

FORMER CAB HEAD CONVICTED

CHICAGO, April 14—Morris Markin, former president of the Checker Cab Manufacturing Corp., and Michael Glassburg, former treasurer, were found guilty of violating the blue sky law by a Cook County jury. Punishment was fixed at thirty days' imprisonment in the county jail and a fine of $2,000 in each case. The defendants have appealed.

Men of the Industry and What They Are Doing

Brosseau Completes Trip

A. J. Brosseau, president of Mack Trucks, Inc., has returned from a two months' trip to Central America and the West Indies. He spent three weeks in Cuba and another week in Jamaica studying the transportation systems of those islands, where development has been delayed by failure to coordinate properly rail, highway and water transport. Mr. Brosseau's chief purpose in going to Central America was to meet some of the delegates who will attend the Pan-American Highway Congress in this country in June and to familiarize himself with the most pressing highway needs of those countries. He is a member of the Highways Committee of the National Automobile Chamber of Commerce which has played a prominent part in arranging the conference.

Jewett and Alger Return Home

H. M. Jewett, president of the Paige-Detroit Motor Car Co., returned from Europe on the Aquitania, accompanied by Col. Fred Alger, director of the Packard Motor Car Co. Mr. Jewett while away kept in close touch with the factory. Although production was slowed this month, it will be speeded up later, and he expects to sell 39,700 Jewett cars in the first half of this year. Production, he says, has been slowed to permit sales to catch up.

Weschler Back from Europe

Frank J. Weschler, president and general manager of the Indian Motorcycle Co., is back from a two months' trip to Europe, where he visited England, France, Belgium, Holland, Germany, Austria and Switzerland. He reports European conditions much improved over a year ago.

Brosseau Director of Certain-teed

A. J. Brosseau, president of Mack Trucks, Inc., has been elected a director of Certain-teed Products succeeding William Potter of Philadelphia.

Shields Elected to Duplex Board

Edmund C. Shields has been elected a member of the board of directors of the Duplex Truck Co., filling the vacancy caused by the death of Charles W. Nichols. Mr. Shields is a well-known Lansing lawyer and is prominent in legal matters pertaining to industrial institutions in that city.

Fagan Heads Credit Department

Arthur H. Fagan has been appointed manager of the credit department of the Motor and Accessory Manufacturers Association, succeeding C. A. Burrell, resigned. Mr. Fagan has been connected with the association's credit department for the last twelve years, in which time he has gained a thorough knowledge of the financial side of the automobile industry. The future plans of Mr. Burrell have not been announced.

Form Aldrich-Alvarez Co.

C. A. Aldrich, until recently sales manager of the Traffic Motor Truck Corp. of St. Louis, and Antonio Alvarez, export manager of the Traffic corporation, have opened offices under the name of the Aldrich-Alvarez Co., 325 Chemical Building, St. Louis, as manufacturers' agent for both foreign and domestic trade, specializing in automotive equipment.

Schuler on Hinkley Motors Staff

C. R. Schuler, for the last nine years chief engineer of the Mid-West Engine Co. of Indianapolis, has been added to the staff of Hinkley Motors, Inc., as sales engineer under B. V. Unwin, sales manager. Previous to his Mid-West connection, Mr. Schuler was identified with Maxwell, Chalmers and Oldsmobile.

Larson Returns from Europe

Charles H. Larson, Oldsmobile distributor for New York, New Jersey and Pennsylvania, returning from a European trip, declares that "in France everyone is taking to the light, popular-priced car." Citroen, he says, is greatly in evidence, and he believes that Europe is entering on an automobile era comparable with what America experienced a few years ago. American cars, he found, are becoming increasingly popular in England and France, but there are few American cars in Germany.

Isaacson Manages Firm in China

Allan Isaacson of Superior, Wis., has sailed for China to assume the managing directorship of the Oriental Motors Co. while the general manager is returning to the United States for an extended visit for business and recreation. Mr. Isaacson expects to be absent nearly two years. He is a graduate of Central High at Superior and of Massachusetts Institute of Technology, Boston.

Changes with Allyne-Zerk

F. J. Lane has been elected vice-president of the Allyne-Zerk Co., Chicago, and placed in charge of sales. E. V. Harkins has been named treasurer, succeeding F. W. Ford, vice-president, who has taken on the duties of general manager. The company manufactures the Allyne-Zerk lubricating system.

Phillips Represents Hilo

W. H. Phillips has replaced George Ostendorf, resigned, in the sales organization of the Hilo Varnish Co. of Brooklyn. He will cover northern Ohio, with headquarters in Cleveland.

Resignation of J. L. Hibbard

J. L. Hibbard, president and general manager of the Maxwell-Chalmers Motor Car Co. of Canada, Ltd., for the last year, has resigned. It is understood that he will shortly make an announcement regarding his future plans.

Duane A. Jones Transferred

Duane A. Jones has been transferred from the factory advertising department of the Cadillac Motor Car Co. to the position of advertising manager of the Detroit branch, succeeding R. V. Dixon.

Edwards Detroit Representative

A. L. Edwards has been chosen Detroit representative of the Blood Brothers Machine Co. of Allegan, Mich., maker of universal joints and propeller shafts, with headquarters in the General Motors Building.

Association Honors Alford

Judge W. H. Alford, vice-president and general counsel of Nash Motors Co., has been elected vice-president of the Kenosha Manufacturers' Association. Charles W. Nash, president of the company, has been re-elected a director.

Company in Cincinnati to Make New Disk Wheel

CINCINNATI, April 16—The erection of a large plant in Cincinnati for the manufacture of a patented wheel for motor trucks is forecast by the announcement of the incorporation of the American Flexible Wheel Corp. by business men of Cincinnati and Louisville.

Incorporators of the new company are: Gerson J. Brown, president of the J. B. Moos Cigar Co.; Edgar S. Freiberg and Samuel Loid of Louisville. The company is to manufacture a wheel patented by John Stitzel of Louisville. It is said to be of the disk type, containing eight springs which make for resiliency and increase the mileage of solid tires.

N. A. C. C. MAY MEETING

NEW YORK, April 16—Directors of the National Automobile Chamber of Commerce will hold their regular monthly meeting in Detroit May 1. Convening in the motor city in May is an annual custom, though most of the sessions during the year are held at the Chamber headquarters in New York.

AUBURN ADOPTS BALLOONS

AUBURN, IND., April 16 — The Auburn Automobile Co. has made balloon tires standard equipment on its new English coach model. It is furnishing balloons as optional equipment on all other models.

Thropp Held Winner in Tire Patent Suit

United States Supreme Court Dismisses Bill Filed by Frank A. Seiberling

NEW YORK, April 14—Carried to the final tribunal, the Supreme Court of the United States, the suit of Frank A. Seiberling against the John R. Thropp's Sons' Co. of Trenton, N. J., for alleged infringement of the State patent for the fitting of the fabric to the core of a pneumatic tire casing by machinery has been decided in favor of the Trenton company in a decision handed down by Chief Justice Taft.

The court "agrees with the Sixth Circuit Court in failing to find invention in the State device either as a mechanical or a method patent" and declares that "the decree of the Circuit Court of Appeals is reversed and the case is remanded to the District Court with directions to dismiss the bill."

Decides Lack of Novelty

In its decision the Supreme Court declares that it agrees with the conclusions as to the lack of novelty in the elements and combinations of the State patent which were reached by the Circuit Court of Appeals for the Sixth Circuit and it declares that inasmuch as the State method involves the finishing of the operation of fitting the fabric to the core by hand that it thinks that the use of springs by State in his combination does not involve patentable invention when everything else is considered.

The case got into the Supreme Court because of a conflict of opinion between the Circuit Courts of Appeals of the Sixth and the Third Circuits. The Sixth Circuit case was one brought by the Seiberling interests against the Firestone Tire & Rubber Co., based on two patents, one issued to Seiberling and Stevens, and the other to Seiberling and State.

The District Court found both patents valid and infringed, but on appeal the Circuit Court of Appeals for the Sixth District held that all the claims of the State patent were invalid and that of the three claims of the Seiberling and Stevens patent, two were invalid and one was not infringed.

Case Taken to Supreme Court

The Third Circuit case brought against the Thropps resulted in a decision that the State patent as qualified by the disclaimers was valid and infringed. Therefore, because of this difference of opinion between the two courts, the Supreme Court was called upon to pass final judgment.

According to Brown & Seward, attorneys for the Thropps, this Washington decision holds the Seiberling patents invalid and frees the Thropps from the charge of infringement.

It is pointed out by these attorneys that the State patent and that covering the Thropp machine differ in that the former is for a machine which makes only fabric casings, whereas the Thropp machine is for both fabrics and cords. Another difference, they say, is that the State machine does not complete the operation mechanically, the last part of the work being done by hand, whereas the Thropp machine, which was claimed to infringe, operates mechanically throughout the complete operation.

It is said that this decision meant at least $5,000,000 to Frank A. Seiberling in case he had won in the matter of royalties from tire manufacturers using his machines inasmuch as the patent laws would have permitted him to collect for production over a period of six years. Many manufacturers, it is said, have been holding these royalties in escrow, awaiting the decision just handed down by Chief Justice Taft.

The history of the case shows that Mr. Seiberling and W. C. Stevens, now of the Firestone company, took out a patent on a tire-making machine in 1904. A few years later another patent on the machine, with improvements, was granted to Mr. Seiberling and W. C. State, then master mechanic of the Goodyear company. Mr. Seiberling secured control of both patents and issued licenses to many of the tire making concerns to use the machines on a royalty basis. The Stevens patent, however, has run its seventeen years of life, while the State patent has only a couple years more of operation.

Affects Seiberling Personally

AKRON, April 15—"The decision of the Supreme Court holding my tire building machine patents invalid has no direct affect upon the tire industry or upon the Goodyear Tire & Rubber Co., but only affects me most directly insofar as it prevents the collection of any royalties on the machines now in use."

This statement was made by Frank A. Seiberling, president of the Seiberling Rubber Co. and formerly president of the Goodyear Tire & Rubber Co., upon being informed of the decision of the Federal Court. The decision marked the end of almost a decade of legal battles and closed one of the most important cases in the history of the rubber tire industry.

While definite information never has been available for a large number of reasons, it has been understood in the rubber industry that some companies were paying royalties on the tire building machines while others were putting aside the amount of the royalties in case the decision was in favor of Mr. Seiberling.

The decision is said to mean that those companies which paid these royalties will be able to stop; those which set them aside will have the use of these funds for other purposes and those which held that Seiberling had no patent rights will continue as they have in the past.

A favorable decision, however, would have meant that the personal fortune of Mr. Seiberling, who was the largest loser when the Goodyear company was refinanced three years ago, would have been greatly rehabilitated. Although millions of dollars were involved, definite figures have never been made available.

Underwriters Adopt New Lock Standard

Takes Action Removing Numbers from Locking Cylinders in Order to Curb Thefts

CHICAGO, April 14—Convinced that a contributory cause of automobile stealing is the ease with which duplicate keys may be obtained from manufacturers and dealers by unauthorized persons, Underwriters' Laboratories began an investigation ten months ago through which it was hoped that remedial measures could be evolved.

The result of the ten months' inquiry, as set forth in a bulletin issued by the Laboratories to listed manufacturers of automobile-locking devices and locking cylinders, was the adoption of a new standard relating to duplicate keys. This standard, which goes into effect Jan. 1, 1925, is as follows:

Number Must Not Appear

"The change number of the locking cylinder must not appear on the face of the cylinder or in such a place that it will be visible when the cylinder is installed in an automobile-locking device."

Reasons for the foregoing conclusion are made obvious by the bulletin's discussion of the subject. With the change number inscribed on the face of the cylinder it is an easy matter for the thief to make note of the number and then obtain a key through a dealer or a manufacturer.

With the key in his possession he has only to watch for a favorable opportunity to make off with the car. By eliminating the change number from the cylinder's face and affixing it to no other place to facilitate the thief's action, the theft hazard is plainly minimized.

In addition to promulgation of the new standard, the Laboratories urge that automobile manufacturers and dealers require identification of applicants for duplicate keys and authority that they are entitled to receive them. Under a decision of the Laboratory, re-classification of automobile-locking devices, as outlined in bulletin form, becomes effective Jan. 1, 1925.

Rollin Increases Output Beyond First Estimates

CLEVELAND, April 16—The Rollin Motor Co. of this city has increased production well beyond the original schedule in order to meet the demand.

Production started Dec. 31, and in January 100 cars were made and delivered. The number was increased to 450 in February and 900 in March. The present production is fifty cars a day.

In order to finance increased production, an offering of 10,000 shares of no par common stock of the Rollin Co. was made yesterday by Reed M. Chambers. The stock was offered at $30 a share.

Survey of Gasoline Situation Under Way

Federal Trade Commission Expected to Report to President at Early Date

WASHINGTON, April 15—An inquiry into alleged profiteering in the sale of gasoline and investigating of certain charges that the crude oil of the country had been "cornered" is well under way here by the Federal Trade Commission, which is acting in response to a request from the President of Feb. 7 last. It is expected the commission will make a report at an early date.

It is announced that schedules have been sent to all principal oil refining and marketing companies to obtain information regarding prices and financial results of the business and other data, the results being checked by the accountants of the commission.

The commission's agents and attorneys are interviewing the officers of oil companies and others conversant with the situation as to the conditions and practices in dealing with petroleum and gasoline, and have also made examinations of the books and correspondence of the companies concerned.

Thus far, it is reported, with but a few exceptions, all have cooperated satisfactorily with the commission.

Chevrolet Plans 6,000 at Janesville in April

JANESVILLE, WIS., April 14—The April production schedule of the Chevrolet branch factory here has been fixed at 6000 cars, compared with an actual output of 6200 cars in March, contrasted to 4494 in March last year. Deliveries during the past month were 5850 cars.

Shipments were practically all by rail, as highways in the greater part of the territory served by this plant were impassable. The district includes all of Iowa, Montana, North and South Dakota, parts of Illinois, Michigan, Minnesota, Nebraska and Wisconsin.

A new department, which will assemble roadster bodies, was placed in regular production early in April, making it unnecessary to obtain all requirements of this type from the Flint works.

Weymann Body Applied to British Open Model

LONDON, April 5 (*by mail*)—The Weymann system of body construction has been applied to an open car (four-seated phaeton) by the Triumph Motor Co., Coventry. Until last year this firm was concerned only with motorcycle production, having the largest output in England, but last year introduced a 12-hp. Triumph light car with an engine designed by Ricardo. This was described in AUTOMOTIVE INDUSTRIES of May 17, 1923.

The Triumph company standardized a Weymann sedan about two months ago, and since then has been experimenting with an open model embodying the same principles, namely flexibly jointed framework and fabric panels. It is a three-door construction with the usual folding top and all-weather framed side curtains, the seats being entirely independent of the body shell and removable.

Automobiles Now Paying Higher Taxes in France

PARIS, April 7 (*by mail*)—As a part of the plan to balance the French budget, new and increased automobile taxes went into effect on April 1. For both passenger cars and trucks a tax of 36 francs per horsepower is applied, this being increased to 44 francs for each horsepower above the tenth, and to 52 francs for passenger cars for each horsepower above the twentieth.

The annual state tax on a motorcycle is 60 francs and on a cycle car 120 francs. Half taxes, to which all persons holding a trading license, and who comprised about 75 per cent of all automobile owners, were entitled, are abolished.

Hudson Acquires Plant of Jefferson Forge Co.

DETROIT, April 14—The Hudson Motor Car Co. has bought the plant of the former Jefferson Forge Co., which adjoins its plant on Jefferson Avenue here and which has been idle for about two years.

For the present the new property, which includes eight acres of ground with the manufacturing buildings, will be used to provide greater facilities for receiving and shipping expansion of Hudson-Essex business.

Haresnape Made Member of A. A. A. Contest Board

FRANKLIN, PA., April 14—The addition of Val Haresnape of Los Angeles to the Contest Board of the American Automobile Association completes the reorganization of that body by the recently appointed chairman, Richard Kennerdell. As announced by him the board now is made up of the following:

Richard Kennerdell, Franklin, Pa., chairman; H. W. Knights, Massachusetts; David Beecroft, C. G. Sinsabaugh and George F. Ballou, New York; Ralph W. Smith, Colorado; P. J. Walker, Northern California; Val Haresnape, Southern California; P. D. Folwell, Pennsylvania; Douglas A. Sheler, Washington; Clifford Ireland and S. E. Hibben, Illinois; F. A. Croselmire, New Jersey.

The Board's advisory committee consists of Alfred Reeves, S. A. Miles and R. P. Roper.

SUE AMERICAN STEAM TRUCK

CHICAGO, April 14—Petitions in bankruptcy have been filed against the American Steam Truck Co. of Elgin, Ill., on claims amounting to $15,784.

A. P. Ames Appointed for Trailer Survey

Will Act for Department of Commerce in Proposed Simplification Program

WASHINGTON, April 14—As a prelude to another meeting of the automobile trailer manufacturers on April 22, to be held here, the Division of Simplified Practice, Department of Commerce, is sending letters to more than 100 manufacturers of trailers and trailer parts in sixty-five cities in twenty States.

These letters announce the selection of Allen P. Ames, manager of the Trailer Manufacturers Association of New York City as representative of the Department of Commerce in making a survey of present manufacturing practices as well as of the actual demand for the types and sizes of the various products.

This move was made following requests for the assistance of the Division of Simplified Practice from trailer manufacturers who are studying how reductions may be made in the numbers of types and sizes of axles, springs and wheels used in trailers.

Other Industries Profit

In view of the fact that the first ten industries to apply simplification through the cooperation of the Division of Simplified Practice report an average elimination of 86½ per cent of varieties for which there was little demand, many of the trailer manufacturers are approaching the project with keen interest. Savings of millions of dollars have been reported to the Department of Commerce since Mr. Hoover, soon after becoming Secretary, began his organized movement for the elimination of waste.

The initial step toward standardization and simplification was taken on March 25 when the Trailer Manufacturers Association, meeting in the Hotel Statler, Detroit, decided to confine its first efforts to axles, springs and wheels.

Rolls-Royce in Britain Shows Greater Profits

LONDON, April 5 (*by mail*)—The report of the Rolls-Royce Co. for the year ended Oct. 31, 1923, will be issued next week and will show that the profit for the twelve months amounted to £156,708, which compares with £149,208 for the preceding twelve months. The directors will recommend that a dividend of 8 per cent be paid, the same as last year.

Leyland Motors, Ltd., truck maker, has issued a report covering the year ended Sept. 30,. A loss of £4,802 is reported, but this compares favorably with the previous year, when the loss amounted to £238,000. The directors state that since September last the average number of trucks ordered per month has been approximately 35 per cent greater than in the previous twelve months.

Truck Use Approved by New York Central

Railroad Perfects Plan for Handling Less Than Carload Shipments in East

NEW YORK, April 14—After three months' intensive study and trial of the motor truck as a replacement unit for the transportation of freight in less than carload lots destined for unloading in the congested New York City districts, the New York Central Railroad has set its stamp of approval on this method of freeing freight cars for other service by using trucks for all less-than-carload lots of freight coming into New York City and points east of Buffalo.

Five Trucking Zones

Following the inauguration of this service on the Harlem side of the Electric Division on Jan. 28 and on the Hudson side of the same division Feb. 11, the New York Central has followed this up by establishing five trucking zones in Western New York in what is known as the second district of the New York Central Railroad, namely, Syracuse, Newark, Rochester, Medina and Buffalo.

The method is similar in principle to that employed on the Electric Division; that is, less-carload freight is handled by trucks from the above mentioned points to various nearby stations, the trucks picking up freight at the intermediate stations for points beyond and, returning, handling freight for intermediate and zone stations. The trucking is handled by a contractor, the equipment varying from one truck at Syracuse, making sixty-four miles daily, to twenty-eight tractors, trucks and trailers at Buffalo, averaging 530 miles daily.

Secretary Loomis of the Motor Truck Division of the National Automobile Chamber of Commerce, who has been investigating this new service, has sent N. A. C. C. members a report on operations. Explaining the operations on the Electric Division, Mr. Loomis says:

Report Made on Operations

The plan provides for making Yonkers a receiving center for all less-carload freight loaded at Brooklyn and New York City stations, and at transfer platforms on connecting Jersey roads, the freight being destined to Harlem-Electric stations, Fordham to White Plains inclusive, and Hudson-Electric stations, Kingsbridge to Croton inclusive.

A fleet of five-ton trucks supplied by a trucking company, which is augmented by additional trucks when necessary, is now engaged in handling this class of freight in the districts specified above, where the railroad is now experimenting with this method of operation.

A comprehensive program of utilizing this trucking system has been worked out by the railroad officials. The trucks leave Yonkers freight station thirty minutes apart, commencing at 7.30 a.m. each week day, the first truck being loaded to the most distant point, Croton; the next one to Tarrytown or White Plains, and so on. The short-distance trucks invariably make two round trips daily, and each truck is provided with a chauffeur and a helper. The freight is loaded systematically; that is, the first to come out of the truck being the last to go in.

The trucks are run on schedule, except, of course, during the recent severe snow storm, notwithstanding which they were only an hour or so late, and did not miss a trip. They average twenty miles per truck per day.

A representative of the trucking company keeps constantly in touch with the chief train dispatcher's office of the Electric Division, and is given information supplied by the agent at each station, which makes possible knowledge of the tonnage to be moved and the working out of a flexible schedule of loading and deliveries. Instructions provide that when tonnage amounting to 10,000 pounds or more is available for movement to or from any one station, it is handled as a solid carload; less than that amount is handled by truck.

The trucks are not run light at any time by reason of the fact that after distributing to the various stations, they return over the same route, picking up freight for Yonkers transfer platform, where it is made up into solid carload lots for further delivery to all parts of the country.

As a result of this method, a total of forty-four cars daily, formerly loaded to Westchester Avenue and Yonkers transfer stations and then peddled out in both directions by way-freight crews, have been eliminated and a considerable saving in time of movement has been accomplished.

Between Seventy-second street and North White Plains, on the Hudson side, two way-freight crews were taken off and one round trip drop-and-pick-up extra was substituted. On the Hudson side, between Seventy-second street and Croton, two way-freight crews were eliminated and two drop-and-pick-up extras put on. These latter trains are being loaded heavier than it was possible to load way-freights, hence a greater number of cars is being hauled; switching at stations is being done more expeditiously, as a result of which the trains get over the road quicker and cause less interference with through trains.

Surveys Under Way for Extension

The New York Central states that motor truck service to replace local freight train service will shortly be established at such other points where surveys will show that such service can be operated profitably and give shippers the requisite service, and that surveys are under way preliminary to the extension of the plan in other territory.

New Overland Factory Aiming at 100 Daily

PHILADELPHIA, April 14—The new plant of the Willys-Overland Atlantic Co. is now in production and is aiming at 100 cars a day. While the present schedule calls for the building of Overland models only, it is thought that the Willys-Knight line will be added in the near future.

The organization and personnel of the new plant is operated as a subsidiary of the parent factory at Toledo. Its officers are: George D. McCutcheon, president; Frank L. Wiethoff, vice-president and treasurer; John Lotridge, secretary, and J. B. Dorris, sales manager.

Paint Spraying Code Framed in Wisconsin

Industrial Commission of State Circulates Regulations Covering Use of "Guns"

MILWAUKEE, April 14—The automotive industries, particularly builders of bodies, are being advised of a new code framed and promulgated by the Industrial Commission of Wisconsin governing the paint spraying trade for the protection of the health of employees with a minimum handicap to operations.

It is the outgrowth of an attempt to prohibit the use of mechanical means of spraying paint by the 1923 State legislature. Another bill was introduced for the regulation of the industry, but finally the question was left to the Industrial Commission for settlement, inasmuch as it was already in possession of such powers.

The code was worked out by representatives of manufacturers, labor organizations, chemists and other factors interested. Briefly the many requirements may be summarized as follows:

All operators of paint spray "guns" must be examined at the start of their employment to determine their susceptibility to paint poisoning, such examinations to be repeated every three months thereafter; that no person be so employed who is found easily susceptible; nose and mouth shall be protected with a respirator or other device of an effective type, furnished and maintained by the employer; such respirators must be cleaned every calendar day according to instructions; employees must wear protective clothing.

Specifications are laid down respecting types of spray guns that may be used, the principal requirement being a minimum amount of mist. Suitable booths to contain gun, work and operator, with continued air circulation, are prescribed.

British India Reduces Airplane Tire Duties

WASHINGTON, April 15—Import duty on rubber tires and tubes used exclusively for airplanes has been reduced from 15 per cent ad valorem to 2½ per cent ad valorem by a notification of the governor general in council Feb. 9 at British India, advices received by the United States Bureau of Foreign and Domestic Commerce state.

Esthonian Ruling

WASHINGTON, April 11—The Esthonian Government has passed a law requiring the customs duties to be levied in gold francs instead of Esthonian marks, effective from Jan. 25, according to cable advices received by the United States Department of Commerce. Duties, however, the advices add, will be actually paid in marks at the ratio of 66.666 Esthonian marks to 1 gold franc.

FINANCIAL NOTES

Continental Motors Corp. has declared a dividend of 20 cents a share, payable April 30. This marks the resumption of the payment of dividends. The last payment was 10 cents a share in December, 1920. President R. W. Judson reports that in addition to working out the losses caused by the depression of 1921, the corporation is in a better asset position by $5,000,000 than at that time. He declares the corporation has practically no bank indebtedness; that its current liabilities are very small, that its cash position is strong and that the capacity is well booked for the current and coming year. Earnings for the first five months this year, he says, are heavily in excess of the same period last year.

Westinghouse Electric & Manufacturing Co. directors have voted to increase the capital stock from $125,000,000 to $200,000,000, the new shares to be common. The proposal will be laid before the stockholders June 11. This step has no special significance, it is said, simply reflecting the expansion taking place in the electrical industry. The company has no immediate plans which would in any way involve the increased capital.

Mengel Co. reports net sales of $10,825,278 for 1923, against $7,948,970 in 1922, and net profit after all deductions of $702.470, against $6,368. After preferred dividends the net profit for 1923 was equal to $7.78 a share earned on the $6,000,000 common capital stock outstanding. Because of back dividends on preferred stock amounting to 8¾ per cent, however, the company reported a deficit of $52,524 for 1923.

Allis-Chalmers Manufacturing Co. reports net profit of $2,703,636 for 1923, against $2,268,549 in 1922. After allowing for preferred dividends the company earned the equivalent of $5.91 a share on the $26,000,000 common stock outstanding, against $4.05 a share in 1922.

Martin-Parry Corp. directors have increased the annual dividend on the capital stock from $3 to $4 a share by declaring a quarterly dividend payable June 1 to stockholders of record May 15. The quarterly dividend previously had been 75 cents.

Kelly-Springfield Tire Co. directors have passed the payment of the quarterly dividend of 2 per cent on the 8 per cent preferred stock. The company had paid cumulative dividends regularly upon this issue since Nov. 15, 1919.

Yellow Cab Manufacturing Co. and its subsidiaries report net profit of $1,005,021 for the first quarter of 1924, equal to $1.65 a share earned on the 600,000 shares of capital stock of $10 a share par value outstanding.

Doehler Die Casting Co. earned $250,000 the first quarter, sales being estimated at about $2,000,000. For the full year of 1923 sales totaled $1,893,031 and earnings per share of common were equal to $3.80.

Pierce-Arrow Finance Corp. has increased its capital $125,000 which has been approved by the State Banking Department. Capital and surplus now total $375,000.

Edmunds & Jones Corp. has approved an increase in the company's common stock from 40,000 to 80,000 shares.

70 ACCEPTANCES TO CONGRESS

NEW YORK, April 16 — Secretary George F. Bauer of the Foreign Relations Committee of the National Automobile Chamber of Commerce reports that he has received seventy acceptances from forty foreign countries for the World Motor Transport Congress which will be held in Detroit, May 21-24.

A meeting of the Foreign Trade Committee will be held at N. A. C. C. headquarters in Detroit next Wednesday at which plans for the World Congress will be discussed, Mr. Bauer announces.

Timken Axle Reports $600,881 Net Income

DETROIT, April 17—Net income of $600,881, after charges and taxes, is reported by the Timken-Detroit Axle Co. for 1923. This compares with $175,000 in 1922. Preferred dividends required $327,086, leaving $273,795 carried to surplus account.

The annual report shows current assets as of Dec. 31 as $7,255,597, including $434,893 cash. Current liabilities totaled $2,384,434. The profit and loss surplus was $4,517,769, compared with $4,122,545 in 1922. Outstanding there is $4,657,300, 7 per cent preferred stock and $8,247,220 common.

President Fred Glover reported to stockholders that whereas business was good in the first half of 1923, there was a slump in the last half which was so serious as to prevent profitable operation.

Sales increased over 1922, but owing to conditions it was difficult if not impossible to show a satisfactory profit and at the same time maintain a large volume, he said. Conditions are gradually improving and at the present time the outlook is far more satisfactory, with a rapidly increasing demand, particularly for axles for motor buses and four-wheel brake equipment.

Nine Shippers' Boards to Form National Body

NEW YORK, April 15—The National Shippers' Advisory Board will be formed at a meeting to be held in Washington, probably in June, according to W. J. L. Banham, general chairman of the Atlantic States Shippers Advisory Board.

This organization will be brought about by representatives of the nine shippers' regional advisory boards in all parts of the country. The purpose is to cooperate with the railroads to provide better railroad devices, less congestion in the terminals and faster and more economical handling of the freight.

Norway Increases Duties on Cars, Cycles and Parts

WASHINGTON, April 14—Advices from Norway state that the Norvegian Storthing has increased the import duty on passenger cars, motorcycles and side cars, as well as on parts of these vehicles, to 25 per cent.

The Cabinet at the same time increased the gold premium from 79 to 90 per cent; that is for a gold duty of one crown 1.90 paper crowns must now be paid.

BANK CREDITS

Written exclusively for AUTOMOTIVE INDUSTRIES *by the Guaranty Trust Co., second largest bank in America.*

Business sentiment improved last week, partly as a result of better weather and increased sales, especially at retail. Stock quotations declined sharply, but commodity prices were firmer than they have been for many weeks.

The production of steel ingots in March amounted to 4,145,829 tons, comparing with 3,780,663 in February and 4,046,844 in March, 1923. The average daily output of 159,455 compares with 151,227 in the preceding month and 149,883 a year ago. The average for March is the highest ever recorded, while the month's total is second only to the peak figure of 4,195,800 for May, 1923.

Unfilled orders on the books of the United States Steel Corp. on March 31 totaled 4,782,807 tons, as against 4,912,901 on Feb. 29 and 7,403,332 at the end of March a year ago. Operations are reported to have been moderately reduced since the beginning of this month, on account of a lighter volume of forward buying.

Exports Equal March, 1923

Preliminary figures of foreign trade for March show exports of $341,000,000 and imports of $319,000,000. Exports compare with $366,000,000 in February and $341,000,000 in March, 1923, while the imports compare with $334,000,000 in the preceding month and $397,000,000 a year ago.

Building contracts awarded in thirty-six eastern cities during March, as reported by the F. W. Dodge Corp., amounted to $433,340,000, marking an increase of 44 per cent over February and of 15 per cent over March, 1923. The gain over a year ago is more than accounted for by the great increase in New York City, amounting to 130 per cent.

Fisher's index of wholesale commodity prices rose last week from 146.2 to 146.6, after a series of continuous declines since the week of Feb. 9. Bradstreet's index stood at 12.6574 on April 1, comparing with 12.8957 on March 1 and 13.9304 on April 1, 1923.

Discounts by Federal Reserve banks declined $100,000 during the week ended April 9, a decline of $10,800,000 in bills secured by Government obligations, being approximately offset by an increase in "other bills discounted." Bills bought in the open market declined $16,200,000.

Call loan rates continued easy last week, ranging from 4¼ to 5½ per cent as against 4 to 5½ per cent the week before. Time money remained at 4¼ to 4½ per cent.

MAXWELL MOTOR MEETING

DETROIT, April 16—The annual meeting of the Maxwell Motor Corp. reelected the present directors. The vacancies on the board to replace W. R. Wilson, Standish Backus and C. C. Jenks were not filled at this meeting.

400,000 Tons Rubber May Be 1924 Output

Chairman of Rubber Plantations Believes That Consumption Will Be Greater

NEW YORK, April 15—An estimate made by C. Heath Clarke, chairman of the United Serdang (Sumatra) Rubber Plantations, places the world production of crude rubber at between 380,000 and 400,000 tons, according to advices received here, while it is believed that consumption will run to approximately 430,000 tons. World stocks should therefore show a decrease this year similar to that of 1923, he believes.

Mr. Clarke also is quoted as declaring that the present price weakness of crude rubber is only temporary, everything pointing to a more prosperous future for those rubber-producing companies in a position to produce upon an economic basis.

370,000 Tons Exported in 1923

"The exportable production of crude rubber last year totaled about 370,000 tons," Mr. Clarke says, "and, in addition to this, over 20,000 tons of rubber, which had accumulated in the free ports of Singapore and Penang, or which had been licensed when the Stevenson act came into existence, were shipped during the year. Of the 370,000 tons, 345,000 tons were plantation rubber, which is estimated about 100,000 tons less than the utmost capacity of the present planted area."

From another source, the Netherlands Chamber of Commerce in New York, comes a statement to the effect that those advocating rubber restriction in the Dutch East Indies are fearful that their policy cannot be put into effect because of the production activities of the native planters.

A statement issued by the chamber this week states that the restrictionists base their fear on the fact that exports to Singapore of native rubber in the months between November and February, inclusive, of the second year of restriction totaled 31,314 tons, compared with 18,181 tons for the same period of the previous or first restriction year. These last figures were double those for the same period in 1921-1922.

Quoted Below European Price

"These large quantities of inferior rubber were marketed 60 per cent below the price of the European or organized planters," declares the chamber.

Continuing, it says:

In the year 1923 the production of European rubber planters in the Dutch East Indies totaled 92,000 tons, while the natives produced about 45,000 tons. For 1924 the production of European planters is estimated at 100,000 tons and that of the natives 90,000 tons. It is estimated by the restrictionists that with the doubling of native production prices of plantation rubber at Singapore will decline 10 cents and of native rubber 5 cents, resulting in a loss to European planters of about $20,000,000 and a gain of about $10,000,000 to native producers.

Under these circumstances, they declare, it is strictly up to the Dutch East Indian Government to consider what measures of relief are most practicable. They have expressed the hope that the Government will act in the matter, but those who claim to know assert that no steps will be taken by the Government to alter its policy of non-interference.

INDUSTRIAL NOTES

Wickman Screw Works, Pittsburgh, has been succeeded by the Union Screw & Manufacturing Co., which will assume and carry out all contracts. The ownership and active management will be the same as heretofore, Vice-president O. C. Zimmerman announces.

U. S. Ball Bearing Manufacturing Co., Chicago, has become the Strom Ball Bearing Manufacturing Co. No changes have been made in the company personnel and the manufacture of Strom bearings will be continued.

Baton Rouge Rubber Manufacturing Co., formed recently with $500,000 capital at Baton Rouge, La., has started construction of a plant there for the manufacture of specialties, including various rubber accessories and parts used in automobiles, such as fan belts, blowout patches, etc. M. L. Castay of Baton Rouge has been named president of the company.

Reo Increases Schedule for "Street Car" Buses

DETROIT, April 14—Reo Motor Car Co. is extending its production plans on its model W bus, known as its street car model, which is designed specifically for city use and as a feeder for electric lines. Under the original schedule the company would be sold ahead to July 1, but this schedule will be increased to five times the earlier figure.

The company reports a heavy demand for this bus type from street railway companies. Six have been shipped recently to the Ohio Traction Co. for use in Akron, Ohio, this shipment being considered significant in view of the recent determination by that city to use electric lines with bus feeders. Twelve buses have been shipped to Philadelphia.

Seneca G. Lewis Dead; Was Rubber Executive

JEANETTE, PA., April 21—Seneca G. Lewis, vice-president and general manager of the Pennsylvania Rubber Co., died Monday at his home at Greensburg. Mr. Lewis was fifty years of age and had been identified with the Pennsylvania Rubber Co. since 1910, prior to which he was sales manager of the Winchester Repeating Arms Co. of New Haven, Conn. At the time of his death he was a director of the Rubber Association of America and a past chairman of the Tire Manufacturers' Division of that association. He leaves a widow and daughter.

METAL MARKETS

If changed at all, the market for steel products has turned a shade flabbier than it was a week ago. Producers of the heavier steel products appear to be especially eager for orders and their price views are quite elastic, but on the whole buyers show little interest in concessions and are not following up their advantage. The sheet situation is unaltered. Producers of full-finished automobile sheets are proceeding on the palpably correct principle that the sane way of meeting the problem of lessened buying is by lessened output.

On the whole, the steel industry finds solace in contemplating in retrospect the greatly quickened rate of output in March and the conclusion that the present lack of demand is to be attributed to output having exceeded consumption rather than to any abnormal falling off in steel absorption. In other words, if the present lull proves a real source of trouble it will have been due to the steel industry's greatly increased efficiency in production.

In this connection it is interesting to note that the automotive industries, following their disastrous experience of a few years ago, set the pace in buying steel from hand to mouth, and it was largely due to this change in buying methods that steel producers were compelled to change their methods so as to be able to meet this change. Apparently they have succeeded in adapting their plans so well to this that the placing of contracts many months before furnishing specifications has become all but a memory. Today orders are accompanied by specifications in many steel-consuming industries that have taken a leaf out of the book of the automotive purchasing agents.

Of course, rails and numerous other heavy steel products are still contracted for in the old way, but as an infallible index to the position of the industry the backlog of unfilled orders has lost weight for the simple reason that a sheet rolling mill may have a negligible reserve of orders and yet be kept in constant and profitable operation by the daily influx of orders accompanied by specifications. This change in methods makes the transition from a period of intensive activity to one of lessened demand painless because it does not involve the cancellation evil formerly so rampant at such periods. During the slowing up that has been in evidence in the last few weeks the word cancellation has not even been mentioned. There were several rumors about requests for postponed shipments, but most of these were found to be untrue.

Pig Iron.—Lower ore and coke prices furnish a concrete argument to melters for not being in any hurry to commit themselves for greater tonnages than they need for immediate requirements. The market is a strictly nominal affair, with No. 2 foundry quoted at $22, Valley.

Aluminum.—The leading interest recently issued a revised schedule of prices for sheets, coils and circles. The market as a whole is inactive. Importers from the Continent apparently have more material to offer. Receipts from Norway continue impressive. A decline in the demand for remelted metal is noted and scrap prices have given way.

Copper.—Propaganda doesn't seem to help the market much. After all the price for copper is a world price, and not influenced by bullish newspaper articles.

Lead.—Storage battery makers await still lower prices before buying.

Calendar

SHOWS

Jan. 3-10—New York, National Automobile Show, under the auspices of the National Automobile Chamber of Commerce, Bronx Armory.

Jan. 24-31—Chicago, National Automobile Show, under the auspices of the National Automobile Chamber of Commerce, Coliseum and First Regiment Armory.

FOREIGN SHOWS

May 10-20—Madrid, Annual Automobile Show, under the auspices of the National Association of Automobile Importers, Palacio del Helo y del Automovil.

May 31-June 15—Turin, Italy, Automobile Show.

Aug. 23-Sept. 6—Toronto, Ont., National Automobile Show in conjunction with the Canadian National Exhibition under the sanction of the Canadian Automotive Equipment Association and the Automotive Industries of Canada.

Oct. 2-12—Paris, passenger cars, motor cycles, bicycles and accessories, Grand Palais.

Oct. 17-25—London, Annual Passenger Car Show, Olympia.

Oct. 22-31—Paris, motor trucks, stationary engines, garage tools and machine tools, Grand Palais.

RACES

April 24—Fresno.

April 27—Trapani, Italy, International Automobile Race.

May 30—Indianapolis.

June 14—Altoona.

July 4—Kansas City.

Aug. 3—Lyons, France, European Grand Prix.

Sept. 1—Altoona.

Sept. 1—Syracuse.

Oct. 4—Fresno.

Oct. 19—Kansas City.

Nov. 24—Los Angeles.

CONVENTIONS

April 28-30—Buffalo, Eighth Annual Meeting of the American Gear Manufacturers Association, Lafayette Hotel.

May 5-7—Cleveland, Annual Convention of the United States Chamber of Commerce.

May 6-9—Detroit, Retail Delivery, Association (Fleet Owner Convention.)

May 19-22—Detroit, National Automotive Service Convention and Maintenance Equipment Show, under the auspices of the Service Division of the National Automobile Chamber of Commerce, General Motors Building.

May 19-23—Atlantic City, National Electric Light Association.

May 21-24—Detroit, International Motor Transport Congress under the auspices of the National Automobile Chamber of Commerce.

May 26-29—Cleveland, American Society of Mechanical Engineers.

June 3-4—Detroit, Midsummer Meeting of the Automobile Body Builders Association, Hotel Statler.

June 4-6—Boston, National Foreign Trade Convention.

June 23-25—Atlantic City, American Society for Testing Materials.

June 23-25—National Team and Motor Truck Owners Association.

June—Washington, Pan American Highway Congress, under the auspices of the Pan American Highway Mission.

Sept. 22-26—Boston, Sixth Convention and International Steel Exposition of the American Society for Steel Treating.

S. A. E. MEETINGS

April 24—Chicago, Tractor Meeting.

May 15—Metropolitan Section, What Roads and Steels Do to Automobiles.

June 24-27—Summer Meeting of the S. A. E., Spring Lake, N. J.

Oct. 21-24—S. A. E. Production Meeting, Detroit.

Nov. 18-19—Joint Service Meeting of the S. A. E. with the N. A. C. C. Cleveland.

—Aeronautical Meeting at Dayton at the time of the Pulitzer Races.

January—S. A. E. Annual Meeting, Detroit.

Motor Bus Operators Organize in Indiana

INDIANAPOLIS, April 16—The organization of the Motor Bus Association of Indiana to include about 120 bus lines of the State was perfected here at a meeting of about fifty charter members from various parts of the State. There have been several bus associations in the State, but there has been no State-wide organization up to this time.

The constitution and by-laws provide in part cooperation between bus owners to promote standards of efficiency of bus travel and operation, closer contact with the public for a better understanding. Conformity of State laws and regulations relating to traffic is to be held a membership requisite. It is hoped to coordinate the transportation facilities of various lines so that they will become a one-unit system.

J. H. Sample of Lebanon, who has been president of the Motor Bus Association of Indianapolis, was elected president of the State body, with W. L. Platter, Rockville, and Byran M. Bouslag, Greencastle, vice-presidents; A. G. Harmon, Greenwood, treasurer, and Ted C. Brown, Indianapolis, secretary.

Directors include J. H. Gregg, Brazil; Frank Layne, Crawfordsville; Norman Harvey, Greenfield; Lester Warner, Windfall, and David Greeson, Kokomo. The officers, directors and an advisory council of one member from each Congressional district of the State will constitute the executive council, which will decide questions of importance affecting the association.

LOWER RATE TO GUATEMALA

WASHINGTON, April 15—A material decrease in the ocean freight rate on automobiles from New York and New Orleans to Puerto Barrios, Guatemala, has been announced by the American Steamship Co., according to schedules filed with the Interstate Commerce Commission. The new rate on weights up to 4000 lb. has been reduced to 40 cents a cu. ft., or 80 cents per cwt., at the carrier's option. The former rate was 56 cents a cu. ft., or $1.12 per cwt.

Cash and Cups for Medals Will Reward Race Victors

PARIS, April 8 (*by mail*)—Cash prizes totalling 250,000 liras and three gold cups or medals of a value of 40,000 liras are offered for the Italian Grand Prix 500-mile race to be run on Monza track, near Milan, Sunday, Sept. 7. The race is open to two-seater 122 cu. in. cars having a minimum weight empty of 1433 lbs., two persons aboard, and a tail overhand not above 59 in.

The entry fee is 5,000 liras per car, with a reduction of 25 per cent for all cars of the same make after the first, and the total amount being refunded to starters.

A twenty-four hour race for five types of cars varying in piston displacement from 63 cu. in. to 183 cu. ins., equipped in all cases with a phaeton body, will be held on the Monza track on June 14 and 15. This is the first occasion on which a twenty-four hour race has been held in Italy.

MARMON HAS BEST MARCH

INDIANAPOLIS, April 15—Announcement is made by H. H. Brooks, sales manager of the Nordyke & Marmon Co., that March was the best month in the history of the company, lacking just nine cars of being 100 per cent more than March, 1923.

Cotton Price Mounts to Nearly 31 Cents

ATLANTA, April 16—Sharp advances in the price of cotton at the spot markets the last two weeks have had a very favorable moral effect on southern business, automotive distributors in Atlanta stating that the effect has already been noted by dealers in the smaller towns and communities, who depend principally on rural trade for their business, and who are enjoying a volume of early spring business that compares favorably with the best years in the history of the automotive industry in the South.

The price of the staple has increased to nearly 31 cents a pound, and when the fact is considered that if the price holds to this level it means something like $150,000,000 more for the 1924 crop than the prices prevailing two or three weeks ago, it can be readily seen why the increase should have a very favorable moral effect on Southern producers and a resultant favorable effect on all lines of business in the district.

European Race Record Set at Geneva Trials

PARIS, April 8—(*by mail*)—Driving a special twelve-cylinder racing Delage, built with a view to attacking world's short distance records, René Thomas established a European record with an average of 129.3 m.p.h., for the flying kilometre, at the Geneva, Switzerland, speed trials.

The time of 17 3/10 seconds was the average of two runs in opposite directions and constitutes a European record for this distance on the road. Road conditions did not allow of the best being got out of the car.